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THE SIGHT-SAVING REVIEW

December, 1942

"Let There Be Sight"

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Number 4

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The Sight-Saving Review

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Table of Contents

PAGE

LATIN AMERICAN DEVELOPMENTS IN THE PREVENTION OF BLINDNESS, Moacyr E. Alvaro, M.D. 235

INDUSTRIAL EYE EFFICIENCY IN THE WAR PROGRAM, Charles P. Tolman 244

APROPOS OF GLAUCOMA—WHAT HAPPENED TO TWO PATIENTS, Mark J. Schoenberg, M.D. 252

A YEAR OF SIGHT CONSERVATION WORK IN WARTIME, Eleanor Brown Merrill 259

THE PARENT'S RESPONSIBILITY IN THE DETECTION AND TREATMENT OF CROSSED EYES, Isadore Givner, M.D. 266

THE FORUM:
Glaucoma, Harry S. Gradle, M.D. 270

NEWS OF STATE ACTIVITIES 275

NOTE AND COMMENT:
Inter-American Aspects of Prevention of Blindness Discussed at Annual Meeting 286
War Eye Injuries 289
Visual Standards for Motorists 289
Diet in Experimental Cataract 290
Source Material on Public Health 291
Social Hygiene Day 291
The Eyes of the Airplane Pilot 292
Steel Gets in the Eye 293
Asks Aid in Bringing New Eye Disease Under Control .. 293

PAGE

Meeting of the International Council for Exceptional Children 294
State Agencies in Prevention of Blindness 294
Edward Jackson, M.D., Sc.D., 1856–1942 295
Luther C. Peter, M.D., 1869–1942 296

CURRENT ARTICLES OF INTEREST 297

BOOK REVIEW by William H. Crisp, M.D. 303

BRIEFER COMMENT 306

CONTRIBUTORS TO THIS ISSUE 307

INDEX 308

Latin American Developments in the Prevention of Blindness*

Moacyr E. Alvaro, M.D.

THE author points out some similarities as well as essential differences between the United States and Latin America in the attack on blindness.

BLINDNESS, as we all know, can be looked upon from two standpoints: the humanitarian and the economic. From a humanitarian point of view its importance can be understood either by closing one's eyes for a few minutes and trying to imagine how it would feel to be in that condition forever, or by reading such pathetic descriptions as that found in "The Rosary." From an economic standpoint blindness means possibly the worst kind of incapacity, since, in spite of the courage and independence of many blind individuals, there remain many who must be provided for, and some who must even depend on other people for assistance in routine daily activities. Much has been done in many countries to improve the situation of the blind, but the fact remains that it would be better to prevent blindness, and we know that it could have been prevented in about 70 per cent of all cases.

What is the Situation in Latin America?

Statistics on blindness in Latin America are rather scanty and in many instances obsolete. They show an average of about 1 to 1.5 blind in 1,000, varying considerably from one region to another. If the total population of the twenty Latin American nations is estimated at one hundred and twenty million, the number of blind persons in Latin America would thus be conservatively estimated

* Presented at the Annual Meeting of the National Society for the Prevention of Blindness, New York, N. Y., December 3, 1942.

at above 120,000. However, these statistics are based in almost every case on census data, and we all know that the percentage of blindness is considerably lower in an ordinary census than in a special census for the blind only. Evidence of this is what happened in Great Britain, where statistics showed about 7 blind persons in ten thousand, whereas, after a blind pension law had been passed, the number climbed up to more than 11. In order to have reliable statistics on prevalence of blindness which will permit comparing the situation in one region with that in another, it will be essential to define the concept of blindness. In some countries, there are still only vague definitions of blindness, such as "the inability to find one's way about alone"; in most, however, it has been established that blindness is equivalent to 20/200 vision or less in the better eye, or to a limitation of visual fields restricting peripheral vision to about 1/6 of the normal. If this definition is taken, estimates of the number of blind persons in the United States are from 200,000 to 250,000, or approximately 1.5 to 2.0 per cent of the population. If these percentages are applied to the population of Latin America, we will have to reckon with a higher number of blind persons than the figure first mentioned, for this would give some 180,000 to 240,000 blind persons in Latin America. This estimate is probably nearer the truth, and should be the basis of our work in the future.

As long ago as the last two decades of the nineteenth century, Latin American intellectuals have shown decided interest in the problem of preventing blindness in their respective countries, and a large number of very good papers on the subject can be found in the medical literature of these countries. Unfortunately, however, very little was actually done in the beginning to prevent blindness from occurring. Direct measures to prevent blindness were: some legislation on the subject of preventing ophthalmia neonatorum in many Latin American countries and provisions for the enforcement of such decrees; the establishment of routine examination of the eyes of school children in several countries; and various measures to combat trachoma in the regions in which it was prevalent. Indirect measures were: the improvement of public health in general, improvement in the standards of the medical profession, including ophthalmology, the increased number of eye specialists, and

the better equipment of eye hospitals and of their out-patient departments.

In the last fifteen or twenty years, an increased interest in the problem of prevention of blindness was expressed in the forming of a number of societies and committees in the various Latin American countries with the specific purpose of promoting prevention of blindness. These agencies have generally been very active, and the aroused interest of the several Latin American governments in the problems of conserving sight is to their credit. After the establishment of these agencies not only has adequate legislation been passed to make compulsory the Credé method of prophylaxis for ophthalmia neonatorum, but actual distribution of the silver nitrate solution in ampules and its effective use has been brought about in several countries; better ophthalmological care for eye patients has been established; better lighting conditions and better protective measures against eye accidents have been enforced in industries.

Some of these agencies especially established for the prevention of blindness were affiliated with the International Association for the Prevention of Blindness, founded by Professor De Lapersonne, and of which Dr. Park Lewis was such an able and enthusiastic vice president. Others had government subsidy. Still others were originally established as charitable institutions for the care of the blind and gradually became interested in the prevention of blindness. The great majority, if not all, of these agencies, have in one way or another established bonds of friendship with the United States National Society for the Prevention of Blindness, and an active correspondence enables an exchange of views which have proved very beneficial. The older sister so far has provided the younger sisters with useful advice. In years to come, as the younger sisters get older, they will probably be able to take back more and tell of their own experiences.

What Can Be Done in the Future?

In order to establish a logical program for the prevention of blindness in any region, it is essential to have reliable data of the prevailing causes. In this respect much will have to be done, as information about the causes of blindness have not been made

available everywhere. The Committee for the Prevention of Blindness headed by Dr. Francisco Belgeri, of Buenos Aires, established by the Pan American Congress of Ophthalmology, of which Dr. Harry S. Gradle is president, has recently sent out a questionnaire to all its delegates, asking them about what has been done in each country with regard to:

a. Prevention of blindness measures already taken and the plans established for the future.
b. Prevalence of blindness in tabulated statistics with etiological considerations (either the classification developed by the Committee on Statistics of the Blind under the ophthalmological guidance of Dr. Conrad Berens, or the nomenclature of the American Medical Association to be used for that purpose).
c. Legislation on prophylaxis of ophthalmia neonatorum.
d. Legislation on industrial accidents.
e. Health of school children, their eye examinations, sight-saving classes, etc.
f. Social service in eye departments in any form.
g. Organizations working on prevention of blindness.

When all this information comes in the Committee for Prevention of Blindness of the Pan American Congress of Ophthalmology will be in a position to start considering the solution of the problem of conserving sight as a whole in this continent. The Committee for the Prevention of Blindness of the Pan American Congress of Ophthalmology has been in close touch with the National Society for the Prevention of Blindness, and the co-operation of these two agencies will always be very useful to the cause.

Regarding indirect measures, which in the long run are effective in reducing the percentage of destruction of sight, substantial advances have already taken place throughout Latin America, more pronouncedly in certain parts, with a slower pace in others, but, generally speaking, substantial progress has been made or is being made in campaigns against syphilitic, gonococcal and tuberculous infections, and in general measures against communicable diseases, better industrial hygiene, multiplication of local health agencies, improvement of housing conditions and nutrition habits, better facilities for the care of the sick, higher educational standards, etc.

In spite of all these improvements, the problem of conservation of sight in Latin America is far from being solved: at least one or two persons in every thousand are doomed to lose their sight if further measures are not put into practice immediately. The data now being collected by the Committee for the Prevention of Blindness of the Pan American Congress of Ophthalmology will prove of great use in finding out what the local problems are in each region so that adequate steps may be taken in order to solve them specifically. However, the experience of thirty-four years' work, of which the National Society for the Prevention of Blindness can boast, and the experience acquired in other fields, could and should be used immediately everywhere. In spite of local variations, the problem in its more important aspects is more or less similar in most of its phases.

The co-operative efforts of many agencies are essential for the solution of this problem. Whenever such agencies do not exist, of course, it will be necessary to create them, and in every case it will be the task of those who are responsible for the conservation of sight to sift out the different items of the program, and take them one by one in order of precedence according to their relative importance in each area. A general plan can be outlined according to data gathered in the different parts of the world where prevention of blindness activities have been more progressive.

According to The United States National Society for the Prevention of Blindness, the sight conservation program* could be summarized as follows:

1. Measures for the control of communicable diseases, a task to be performed by the health authorities (and it is to be hoped that just as blindness due to smallpox has almost completely vanished from the records, blindness due to venereal and other communicable diseases will vanish, too, in a not-too-distant future).
2. Measures for prevention of eye hazards in industry and elsewhere, a task to be solved chiefly by safety engineers who should be familiar with eye accidents (to which I should like to add legal measures in the compensation field which would render medical assistance to the injured more efficient in terms of conserving sight).

* Based on an article by C. Edith Kerby to appear in the 1943 *Social Work Yearbook*.

3. Measures for investigation of hereditary factors of blindness, a job for the geneticist, but the practical conclusions therefrom to be used by the physician or social worker.
4. Measures connected with a general health program—better housing, health education, nutrition, etc.
5. Measures to ensure preventive eye examinations in order to have early diagnoses of eye ailments with a possibility of following up these cases and giving them adequate assistance.
6. Measures to ensure appropriate specialized medical assistance to everyone afflicted with an ailment of the eye. As things stand today, facilities for treatment of eye diseases vary considerably in the different regions of Latin America. Whereas in some parts there are adequate hospitals and out-patient departments for the treatment of all or at least a considerable number of charity patients, and the higher standard of living enables another large group to consult their private eye specialist, probably a well-trained doctor of high standards, in other parts the number of hospitals is limited, the equipment is inadequate, the doctors working therein did not have the opportunities for getting desirable training; and in still other places such facilities for treatment of eye cases are totally non-existent. Due to insurmountable transportation difficulties, the problem is not only to have a well-trained, high standard group of ophthalmologists, but to make sure that the general practitioner has enough knowledge of ophthalmology to equip him at least for giving first aid in eye cases.

   Social workers in Latin America are possibly more essential to any program of sight conservation than in this country, as in the southern countries, more often than not, it is not enough to give the patient a medical or therapeutic prescription and leave the use of it to his judgment. In most cases, there are difficulties which must be overcome; moreover, the patient will have to be enlightened on the seriousness of his predicament and on the necessity for treatment.

   It is quite important, too, that ophthalmologists, general practitioners, nurses, and social workers located in inaccessible regions be provided with information on the recent advances of ophthalmology in particular and medicine in general. Apparently, advantage is not being taken of technical means now at our disposal for the communication of ideas. The methods used nowadays are to a large extent those used fifty years ago, horse and buggy methods, as it were, as compared with streamlined means of conveyance at our service. New

ideas, concepts, methods of treatment and prevention take considerable time to find their way into the medical journals and even longer to reach the abstract journals which are accessible to the majority. Something ought to be done in order to ensure access for everyone to the more recent developments of science in all its forms. Possibly radio, microfilm or simple abstracts sent by airmail or some similar means could be considered for solving this question of great relevance in preventive medicine. Especially in Latin America, where in some instances doctors have unsurpassable difficulties in congregating for scientific pursuits, this means of keeping them up to date would be of unquestionable value and would probably prove to be one of the important items for the success of preventive ophthalmology.

There are not more than one thousand ophthalmologists scattered over the whole area of Latin America to give their services to a population of some one hundred twenty million people. This number, small in itself, is relatively still smaller when the difficulties in transportation have to be taken into consideration. The improvement of facilities for training good eye specialists or for imparting good ophthalmologic knowledge to general practitioners is highly important. As a step in that direction, the Pan American Congress of Ophthalmology has been able to secure 25 fellowships for Latin American ophthalmologists every year to do post-graduate work in the best institutions of the United States and is endeavoring to secure the establishment of "Boards," similar to the American Board of Ophthalmology, in the different Latin American countries. It can be anticipated that these boards will have the same stimulating influence in raising the general standards of ophthalmology in the southern countries as they had in North America. Both the translation and adaptation of text books used in the United States into Spanish and Portuguese with the aid of the professors of ophthalmology of the Latin American countries and the increasing cultural exchange between ophthalmologists north and south of the Rio Grande, will aid in improvement of the facilities for treating eye cases.

7. Measures to give more comfort and efficiency in the use of the eyes, such as improved lighting, special classes for partially sighted children (to which I should like to add routine examination of all workmen in order to ensure better vision through adequate optical correction and possible rehabilitation through the improvement of remediable conditions).

8. Legal provisions which directly or indirectly make mandatory the desirable measures just advocated.

At a meeting held last July, Latin American ophthalmologists recommended a series of measures which can all be fitted into the program outlined above.

The problem of sight conservation, as we all know, can be divided into many aspects which may be covered by different bodies or organizations. Even if all these organizations did already exist and work satisfactorily, it is essential that in each country an agency of some kind act as a catalyst in order to stimulate and co-ordinate all the efforts made for the same purpose and make them more efficient. These agencies will be either governmental or private institutions, but they should all make use of the experience of other agencies already established. It is my suggestion that the National Society for the Prevention of Blindness prepare an outline for a basic sight conservation program based on its previous experience, to be translated into Spanish and Portuguese and to be released for publication first in the ophthalmological and medical papers, and then in less technical language in all the newspapers and magazines in Latin America.

The aim of such a special co-ordinating prevention of blindness agency should be to give guidance to all kinds of individuals or groups interested in the problem of sight conservation. Through research and field work, and through a specialized library, it should gather information on the nature and extent of the problems and new developments for their solution. Furthermore, it should co-ordinate all the existing efforts, and fill in the possible gaps. The preparation of medical social workers specializing in ophthalmology, of teachers for sight-saving classes, of executives for prevention of blindness work, is equally important and should be the task of these agencies, which would keep in constant touch with each other in order to exchange viewpoints and the results of their respective experience.

It should be borne in mind that the Western Hemisphere extends from the arctic cold climate, through temperate zones of Canada, the United States and northern Mexico, through the subtropical and tropical sections of Central America and the northern part of

South America, to the temperate zones of southern Brazil, Argentina, Uruguay and Chile, and again to the sub-arctic climate of Patagonia. High chains of mountains, plateaus of different altitudes, lakes, large rivers, prairies, savannahs, deserts, provide all sorts of variations, and people of very different races inhabit these regions. If standardized methods of investigation can be used throughout this composite cross section of the earth, invaluable data will be gathered which will enable the generations to come to make great strides in the progress of medicine in all its aspects and provide unlimited possibilities for the well-being of man.

This war, in spite of all its evils, is paving the way for a better understanding between the peoples of the Americas, and it is to be expected that the challenge presented to medicine on this continent today will be met by a mobilization of all the sciences without precedent in man's age-long fight against disease. America today takes the leadership in this movement, but it is to be hoped that in the future the burden will be equally divided and that a full and an evenly allotted co-operation of each and every one of the twenty-two nations of this hemisphere will be established.

Industrial Eye Efficiency in the War Program

Charles P. Tolman

STUDY of eye safety practices and eye efficiency in fifty industrial plants.

EXPANSION of industry and acceleration of production of war materials have placed a heavy responsibility on the eyes as well as on industry. Visual efficiency is of utmost importance in the war effort, both from the point of view of speeding up production and of avoiding accidents. In order to learn the extent of safe practices as they relate to eyesight in typical plants, the National Society for the Prevention of Blindness undertook a survey of industrial plants based on response to a questionnaire and interviews.

Extent of Study

The study covered fifty plants with a total of 166,862 workers. The plants which were surveyed employed from 12 to over 25,000 workers. Twenty-two plants had more than 1,500 employees, 10 plants had from 500 to 1,500 employees, and 18 less than 500. Small industries have not, as a rule, followed safe practices in their plants to the extent that such practices are followed in the larger plants. For this reason, small as well as large plants were included in the survey.

The limited budget available for this survey made it essential to plan the inquiry along lines which would give the most reliable information from the plants which could be visited or otherwise checked. Accordingly, the questionnaire which is reproduced herewith will be found to contain items of general safety interest, as well as those directly relating to the protection and best utilization of eyesight in industry. In addition to the "yes" and "no" answers, the replies are further qualified to amplify the picture.

INDUSTRIAL EYESIGHT PROTECTION SURVEY—APPRAISAL FORM

THE ADMINISTRATIVE PROGRAM AND PRACTICE IN THE PLANT AS A WHOLE REGARDING EYE SAFETY—PAGE 1

Name of concern: _____ Address: _____ Date: _____ No._____

Executive in charge of safety: _____

Principal products: _____ This workroom: Product: _____

Total employees: _____ Total employees: _____

Administrative program:	Yes	No	Remarks
1. Safety program			Complete Partial Casual
2. Ophthalmic supervision			Regular By reference Name
3. Medical supervision			Regular By reference Name
4. Industrial nursing			Plant service Home service
5. Safety supervision			Full-time supervisor Part-time supervisor Foremen
6. Safety committee—Membership			Rotating Company Mixed Workmen
7. Education of workers			Bulletins Pay envelope Talks Job training
8. Education of foremen			Bulletins Pay envelope Talks Training course
9. Enforcement of rules			Warning Discipline Committee action Discharge
10. First aid personnel			Doctor Professionally trained R.C. or B.M. trained
11. First aid facilities			Kit Hospital room Eye fountains Showers
12. Examination for occupational vision			Snellen chart Telebinocular Ophthalmologist
13. Job analysis for occupational vision			Cooperation of ophthalmologist
14. Prescription lenses for occupational vision			Provided by company By company assistance Required of workers
15. Study causes of injuries			Safety supervisor Safety committee Management
16. Records of injuries			Eye tests of principals Foot-candle test of locale
17. Use made of records of injuries			Statistics Prevent recurrence Improve operation
18. Periodic eye examination			General Workers subject to special exposure
Protective equipment: (Is:)			
20. Every worker individually supplied?			
21. Equipment fitted to worker?			By foreman By safety man By doctor
22. Individual equipment regularly sterilized?			What periods
23. Equipment used in common?			Goggles Special equipment, such as oxygen breathing
24. Equipment sterilized before reissue?			
25. Equipment properly maintained?			Periodic reconditioning Local cleaning kit Casual
26. Storage space provided for individual equipment?			

FIGURE I.—APPRAISAL FORM

Note to Industrial Executives.—Copies of the Appraisal Form used in the survey are available upon request. A report from the personnel department can be made in less than ten minutes by checking the form. The executive or manager can see at a glance whether eyesight is being protected and whether there is room for increasing his production and reducing spoilage by further improvement in the visual conditions in the plant. Write for suggestions and information to the National Society for the Prevention of Blindness, Inc., 1790 Broadway, New York, N. Y.

General Safety Provisions

The study revealed that practically all plants carry out nearly all of the general safety procedures, such as providing first aid facilities (100 per cent); having definite safety programs and definite policies for the enforcement of safety rules (98 per cent); employing safety supervisors, full time or part time, according to the size of the plant (94 per cent). While the study took into consideration general safety procedures, it was mainly concerned with the protection of eyesight and the part played by good eyesight in speeding up production.

Industrial Eyesight Supervision

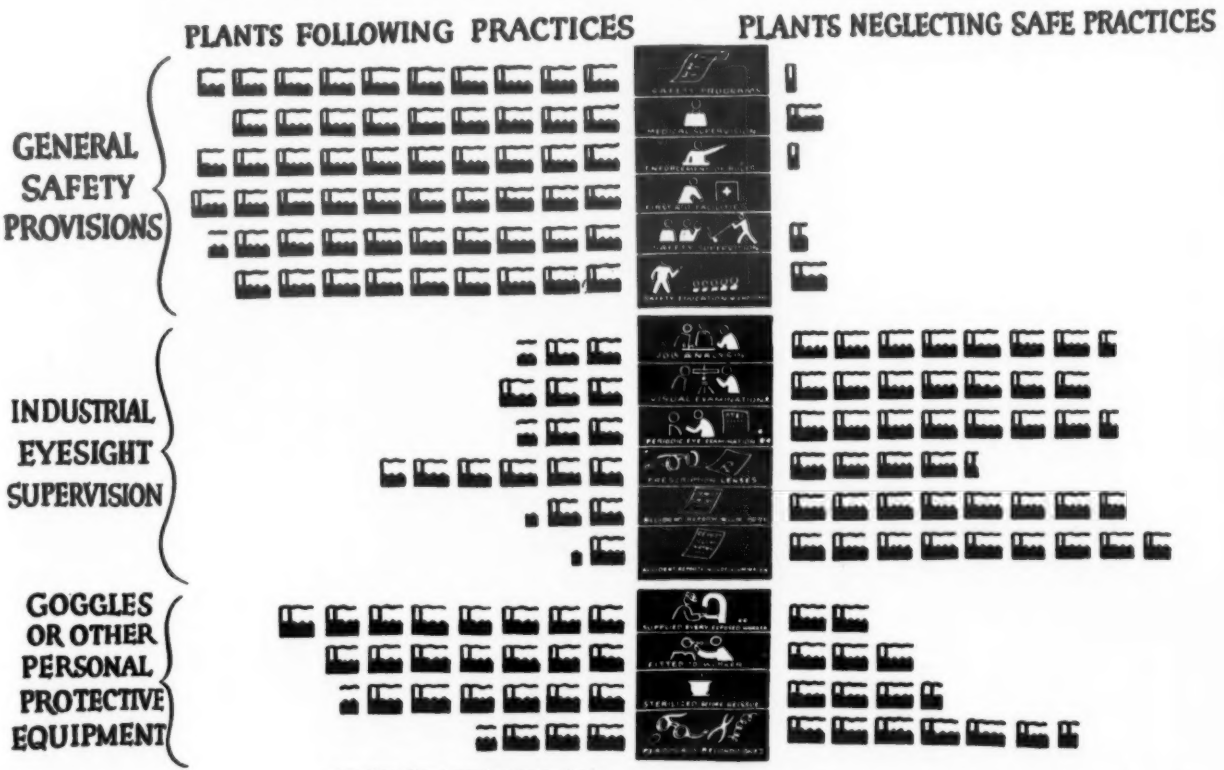
Under this heading are considered those factors having an immediate bearing upon production, reduction of spoilage, utilization of workers with subnormal vision and workers with "old sight."

Despite the fact that front rank companies provide good general safety facilities, they, for the most part, appear to be unaware of the importance of eyesight in industry as a managerial responsibility.

Job Analysis for Industrial Visual Requirements with Cooperation of Ophthalmologist.—Job analysis for visual requirements is claimed as a practice by 24 per cent of the plants. Since only 10 per cent have the co-operation of an ophthalmologist, we may consider that only these give adequate attention to this very important subject. Seventy-six per cent of the plants make no study to determine what visual requirements are necessary or acceptable to qualify a worker for any particular job. This means that they do not know how many color-blind or one-eyed men, or men with subnormal but correctible vision can be utilized. On the

RESULTS OF INDUSTRIAL EYESIGHT PROTECTION SURVEY

Summary of Returns from Fifty Typical Plants Employing from 12 to 25,622 Workers—Total 166,682.
Note Deficiency of Eye Conservation Practices in Contrast to those of General Safety.



* Snellen Chart examination omitted

** As determined by plant

Each symbol represents 10% of all plants surveyed

National Society for the Prevention of Blindness, Inc.
1790 Broadway, New York City

FIGURE II

other hand, they may be employing men whose vision is a hazard on the particular job. For example, a man may be working as a crane operator who has deficient "depth perception," and so cannot judge the height and placement of the crane load. This would make him a menace to life and property, while if assigned to another job for which his eyesight is suited, he could carry on safely and effectively.

Visual Examination.—Visual examination is made by eye physicians in 10 per cent of the plants; 20 per cent more employ binocular instruments; this leaves 35 plants—70 per cent of the total—in which no test of employees' vision is made at all, or the test made is not adequate to determine the essential factors of industrial vision. For example, a Snellen chart alone will determine only the central vision of the worker for distant objects.

Periodic Eye Examination.—Periodic eye examination of workers who are especially exposed is reported by 14 per cent of the plants. Only 10 per cent of the plants report a general periodic examination of all workers. This is a serious oversight because some industrial eye injuries are cumulative—for example, those due to intense radiation as in welding and furnace work.

Prescription Lenses.—Prescription lenses, in this discussion, refer to those goggles provided with nonshatterable lenses which have been ground to compensate for the visual defect of the employee. Prescription lenses are provided for, or required of, the workers in 58 per cent of the plants. This leaves 42 per cent in which no attention is paid to this subject. Only 34 per cent of the plants provide prescription lenses at company expense, and, in most of these, provision is made only for workers who are required to wear goggles. The opportunity to raise productive efficiency of others who need eye correction is lost.

Vision of Workers and Illumination Included in Accident Reports.—According to informed opinion, about one-fifth of general accidents result from bad "seeing" conditions, whether subnormal vision, deficient lighting, or glare. It might be expected, therefore, to find these items included in accident reports. However, only 22 per cent of the plants report the eye condition of the persons involved, and only 12 per cent mention the illumination at scene of the accident. The lack of these data suggests that a much greater

percentage of general accidents may be caused by bad eyesight or poor illumination, or both, than is generally supposed.

Vision for Victory.—The average plant investment per worker in machine industries is about $6,000. Most employers agree that, according to the nature of the work, from two weeks to two months is required before a new employee is capable of working at standard performance. Why then should there be any hesitancy in making an adequate examination at the cost of a few dollars to make sure that the new employee is being trained on that job at which he can work to the best advantage of all concerned?

Much more might be said of all of the items in this section, but the importance of eye conservation as a factor for maximum production of war materials may be epitomized by the statement that a substantial increase in production may be realized through an adequate program for eye conservation and illumination—this in addition to the humane results of preventing loss of sight or injury to the eyes.

Goggles and Other Personal Protective Equipment

According to the experience of Dr. Albert C. Snell of Rochester, New York, in his private practice, 90 per cent of eye accidents have occurred while goggles were not being used. Mr. Harry Guilbert, Director of the Bureau of Safety and Compensation, the Pullman Company, indicated that the total loss of use of one eye costs industry $12,000. Both of these figures are in line with conservative estimates of other authorities. In fact, most authorities agree that at least 95 per cent of injuries to the eye can be completely prevented simply by wearing suitable protective equipment. In a very large majority of instances, such equipment is merely a pair of industrial safety glasses. Much complaint has been heard on the part of management that workers refuse to wear the goggles provided. Before we blame the men too much, let us look at the failure on the part of management in some of the front rank companies.

Goggles Supplied to Every Exposed Worker.—Eighty per cent of the plants claim to supply goggles to workers whom they consider "exposed." This figure is doubtless in excess of the fact, because some exposures are frequently not recognized. For ex-

ample, some front rank plants do not consider that a lathe operator is exposed to eye injuries!

Goggles Fitted to Worker.—Only 70 per cent of the plants fit the equipment for the comfort of the worker, although safety men agree that this is essential to gain co-operation from the workers in the wearing of protective equipment. In 30 per cent of the plants, no attempt of any kind was made to fit the goggles or other equipment to the worker. That means that neither the plant doctor, the safety man, nor the foreman paid any attention to this feature.

Sterilization and Reconditioning of Goggles.—In many plants goggles are turned in and re-issued, and we find that more than a third failed to sterilize the goggles before issuing them to be worn by another workman. Does it not appear that these failures to follow the practices of common sense and ordinary hygiene may account, in large measure, for the difficulty in getting 100 per cent effectiveness in the "goggle" program?

Recommendations

Obviously, industrial concerns need to give much more attention to the subject of industrial vision, not only for humane reasons, but to increase production, to reduce spoilage and to add manpower—by providing prescription lenses to correct subnormal vision so that workers may be usefully employed in the war effort who would not otherwise be available.

On the basis of the findings of this study of 50 plants which may be considered a sampling, the following practices for industrial plants are recommended:

1. Provision for job analysis for industrial requirements, with co-operation of ophthalmologist.
2. Provision for routine visual examinations which are sufficiently complete to find all defects in visual function at working distance, visual acuity, depth perception, peripheral vision, and color vision under supervision of ophthalmologist.
3. Provision for periodic eye examination of all employees—especially those exposed to eye dangers, those involved in accidents, or those reported for spoilage of materials.

4. Provision for prescription lenses, when needed, either for safety or efficiency, or both.

5. Records of accidents to include notation of visual efficiency of principals involved and status of illumination at scene of accident.

6. Provision of goggles, fitted to the individual employee.

7. Sterilization of goggles before re-issuing.

8. Periodic re-conditioning of goggles or other eye safety equipment.

Apropos of Glaucoma—What Happened to Two Patients*

Mark J. Schoenberg, M.D.

THE story of two patients who did not heed warning symptoms.

YEAR after year, in endless procession, patients with histories like those I am about to tell come to the consulting room of the troubled eye specialist. "Too late" are the words he must say so often that he dreads having to speak. How can he be satisfied merely in trying to do his best for these people, when he knows that what might have averted the catastrophe was forewarning—getting the people to realize the importance of recognizing the early symptoms of glaucoma. These patients should have been given courage to overcome inhibitions and consult at once a well-trained eye physician on the appearance of danger signals.

What are these inhibitions that keep sufferers in the early stages of glaucoma from seeking medical advice? As patients report them, there is the fear of making much of little, of appearing (to others or to one's self) cowardly or neurotic. There is the ever-present tendency to put off till tomorrow, to wait to see if the trouble will pass. There is the conflicting advice of friends—to "forget it," to wait, to consult a second specialist before the first one has had a chance to clear up the problem. For some temperaments, it is hard to make quick, clear-cut decisions. But this is one situation in which he who hesitates may be lost. The only safe course of action is to go at once to a reputable eye physician, tell him all your symptoms and the possible danger they may have suggested to you.

Too few persons appreciate the seriousness of glaucoma. Perhaps this is why so few are prepared to checkmate its worst effects. Miss

* Reprinted, with permission, from *The Trained Nurse and Hospital Review*, October, 1942.

Theresa Dear,* a gifted writer who is herself a patient suffering from glaucoma, knows it now for what it is: "A cruel, blinding eye disease which never forgives nor forgets . . . unless—" The end of that sentence, of course, is, "unless it is detected in time and properly checked." And detection, of course, depends on knowledge of symptoms. By the time the attentive reader reaches the last page of this article, those symptoms will be clearly impressed on his mind.

Let me tell you two stories that typify the experience of countless glaucoma sufferers. The first is about a woman who tried to be her own doctor, with results which you will read below.

The Story of Mrs. Masie Brooks

Mrs. Masie Brooks,* by choice a housewife and mother, was forty-eight years old when her eye trouble began. She was a modest person, short, stocky, nervous, easily upset and of a worrisome disposition. She had always been well enough not to require a physician's attention. During the past eight months she had been going through menopausal difficulties of moderate intensity. One night she was awakened by a violent headache and nausea; shortly after, she vomited. Her right eye was very sore and on looking into the mirror she was frightened at its redness and bulging. It seemed as if a little Satan were hammering at the eye with the steadiness of a never-ending mischief. The sight was "as good as gone" and the electric light appeared surrounded by a mist or halo with rainbow-tinted rings around it. Her husband remarked that her eye looked glassy and the pupil was wide. But he tried to pacify her. "It's all from an upset stomach," he suggested. The patient was rather inclined to believe that the radio news she had listened to just before retiring had upset her too much.

Aspirin and an enema relieved the intense suffering somewhat, but the sight remained almost completely snuffed out. The old habit of waiting for Nature to take care of upsets of this kind was religiously adhered to and a more rational procedure, such as consulting an eye physician, was postponed. Two weeks later, she finally went to the specialist. His gentle scolding, "*You have waited too long*," came as a hard blow.

The trouble was not due to an upset stomach; it was an attack of acute glaucoma. The eye was already badly damaged. It was doubtful, said the eye surgeon, whether the sight could be restored by an operation.

* Name fictitious.

This is, in main outline, a story which repeats itself many times every day throughout this land. The tragic outcomes of most of these cases are due to delay; and delay is permitted through failure to recognize major signs and symptoms.

Symptoms of Acute Glaucoma

The symptoms of glaucoma are: Sudden onset of the attack; severe pain in the head; nausea and vomiting; congestion of the eye; enlargement of the pupil; and clouding of vision—seeing a mist or a halo of rainbow-colored rings around lights.

Glaucoma attacks may be extremely violent, or moderate, or even mild. Some of the symptoms may not be present at all, but a combination of a few of them, such as cloudy vision, seeing rings around lights, and pain, is sufficient to make the presence of glaucoma quite probable. In such a case, urging the patient to seek the advice of an *eye physician* is imperative and obligatory. (Never be hasty in making a definite statement concerning the presence or absence of glaucoma, especially on the strength of one single symptom. Leave the diagnosis to the eye physician.)

The acute attack of glaucoma is usually so painful that the average patient cannot stand the agonizing suffering. A doctor, usually the family physician, is consulted as soon as possible. If he has ever seen a case of acute glaucoma, he will see to it that an eye physician takes over the case immediately. An operation is to be performed within 48 hours after the onset of the attack. The patient may think one day more or less won't matter. But, actually, when an operation for acute glaucoma is to be performed, *one* hour more or less may decide whether the eye affected shall see again or remain permanently blind.

Nature is not always merciful; she does not always turn on a flood of warning signals to inform us of approaching danger. In acute glaucoma, she gives us a jolt by sending us insistent and loud messages, such as excruciating pain and loss of sight, which are compelling enough to awaken the most inert among us. However, there is another type of glaucoma, the so-called "simple glaucoma," in which the warnings of approaching danger are so faint and vague that they are usually ignored or overlooked even by very observant

persons. In this type, the eye does not become congested and is rarely painful.

Let us see what happened to our other patient.

The Story of Judge Myron Pull

Judge Myron Pull,* a distinguished lawyer, age fifty-four, tall, blond, heavy and tense, erect and dignified, states that the reading glasses prescribed by a colleague a few months and again a few weeks ago, did not give him the usual reading comfort. "In fact," he said, "my eyes blur and ache sometimes, even when I do not read." To questions about his general health, he answered emphatically: "I have been well all my life. For years my physician, who has given me yearly medical examinations, has never found anything the matter with me." Suppressing a smile and slightly bored by my insistence on asking questions regarded as superfluous by the average layman, he reminded me that all he needed was just a "*good* pair of glasses." Pointing to a pile of spectacles he had brought along he repeated, "My own eye doctor is an excellent man, but this time he fell down on the job."

An exhaustive questioning and routine examination gradually yielded, one by one, a number of data pointing to the fact that our man was suffering from simple glaucoma. His eyes showed the usual damage caused by increased pressure and other disturbances within the eye:

The head of each optic nerve was pale, degenerated.

The pupils were slightly dilated and reacted poorly to light.

The measurement of the degree of hardness of the eyeballs by a method called tonometry revealed that it had risen above normal by 30 per cent.

One of the important methods of examination of the functions of the eye is the investigation of its ability to see clearly, in the various parts of the space surrounding it, colors and objects of a certain size and under a certain degree of illumination. This surrounding space visible to an eye constitutes the field of vision of that eye. If the extent of the field of vision is reduced, or if blind areas are discovered in which small objects are not seen at all, then we are dealing with a serious condition which has to be carefully considered. In glaucoma the examination of the fields of vision very frequently reveals characteristic defects. The investigation of this patient's fields of vision showed the presence of such defects and blind areas.

In the course of the tedious and somewhat lengthy examination, a number of other data were obtained confirming the original sus-

* Name fictitious.

picion concerning the nature of the disease. The data, however, are too technical to be mentioned in this paper.

"One more question, Judge, before I am ready to tell you all I know about your trouble. Did you go to the movies recently?"

"Yes, last night."

"Did you notice any particular reactions in your eyes while you were at the movie, or after you left it?"

"Well—yes, as a matter of fact I did. I began to have a splitting headache after being in the theater about one hour. It was around 10:30 when my wife and I left the movie theater. As we reached the street, it seemed to me that there was a dense fog and that colored halos were around the electric lights. When I mentioned this to Mrs. Pull, she looked at me in surprise and said, 'You can't be serious! Maybe this is the effect of that extra cocktail before dinner.' When I told her this was no delusion, she assured me that I was suffering from 'imaginitis' and we let the matter rest there. However, I do think something ought to be done about these glasses."

When we reached the end of the investigation, Judge Pull was quite amazed to learn that his reading difficulties were not due to the glasses and that his trouble was simple glaucoma. "Simple?" He seized on the word. "Thank the Lord that it is only 'simple.'" It took time to explain that the term "simple," with its optimistic overtones, is quite deceiving; perhaps "latent" (noncongestive) as opposed to "acute" (congestive) might be a more appropriate word. Since in simple glaucoma many patients are unaware of their impending or actual loss of sight for a considerable length of time, it is justifiable to consider this type the more malignant of the two.

In Judge Pull's case, however, as in many others, we find warnings which, although not very spectacular, are of grave significance. It is important that the public in general should understand the meaning of such symptoms. Thus, in Judge Pull's case we find the following warnings:

Symptoms of Simple Glaucoma

Difficulty in reading even for a short time, followed by a sense of discomfort or pain. Glasses are ineffectual in such cases.

Occasional blurring of sight in one or both eyes.

Seeing a mist or halo with rainbow-colored rings around distant lights, especially after a stay of one or more hours in the dark.

The defects in our patient's fields of vision were so extensive and so near to that area providing central vision, that the poor man

was constantly in danger of losing his sight entirely. Under such conditions, in which the optic nerves were in a fairly advanced stage of degeneration, all that treatment could hope to attain would be perhaps to save some of his sight—perhaps! This patient also arrived too late. If he had paid attention to his initial symptoms before the tissues of the eyes were damaged, he would have had a better chance.

What is Glaucoma?

What is happening, what is going on in eyes affected with glaucoma? Patients and their relatives keep on asking this question. The more they understand about the gravity of this disease, the easier it is to obtain their co-operation.

Glaucoma affects various tissues of the eyes, and most probably those of other parts of the body, and hence disturbs their normal functions. The characteristic changes in the eye are:

1. The eyeballs become harder than is good for them.
2. The circulation of the blood and of other fluids within the eyeball is interfered with.
3. The free drainage of the fluid from the eye is slowed down or even completely blocked, and the toxic substances, produced in the course of the normal chemical processes in the ocular tissues, find no free outflow. These toxic substances which are tardy in being eliminated have a damaging effect upon the ocular tissues.
4. The increase of pressure within the eye (hardening of the eyeball), in addition to the presence of toxic substances, chokes and impairs the health of the blood-vessels, reduces the supply of food material and oxygen to the retina and the optic nerves, causes degeneration of the tissues, especially of the optic nerves. The effect of this degenerative process is progressive diminution of peripheral and pericentral vision. The final result is diminution or total loss of vision.

Facts You Should Know About Glaucoma

For a deeper insight into the problems of glaucoma, consider the following major facts about this sight-killer:

Glaucoma is a disease localized, as far as we know, mainly in the eyes. The French eye physicians justly say: "A patient

with glaucoma has a sick eye in a sick body." Glaucoma may be of various degrees and varieties.

Who gets glaucoma? Any one of us may be predisposed to the disease. Every person over forty or even younger should have a yearly eye examination.

If it is discovered or treated too late, glaucoma almost invariably ends in complete blindness. At the present time there are many cases of glaucoma which have not been recognized and treated soon enough, and have resulted in blindness.

There are in this country more than 20,000 people permanently blind from glaucoma and at least 100,000 who have lost the sight in one eye from this same cause. In at least one-third of these patients, blindness could have been prevented.

Medical practitioners, public health officers, social workers, nurses, members of the staff of agencies interested in prevention of blindness and, above all, eye physicians should be actively engaged in the search for and detection of early cases of glaucoma.

All those who are interested in prevention of blindness, particularly the glaucoma patients themselves, must be made to understand that the initial treatment is only one step in the process of saving sight. Good results can be obtained only by *constant* watchfulness and expert treatment. They should never forget the penalty which will follow irregular attendance and half-hearted co-operation and that penalty is blindness.

A Year of Sight Conservation Work in Wartime*

Eleanor Brown Merrill

POINTING out the Society's activities in relation to the war effort, the author discusses public and professional education, glaucoma, industry, medical social work and state programs for conservation of vision.

IT IS a pleasure at this Annual Meeting of the National Society for the Prevention of Blindness to report to our members and friends on progress in the last year. At best, one can give in the time allotted but a bird's-eye view of the Society's activities. That we are able to show accomplishment is due not only to the continued financial support so encouraging to us all, but also to the wholehearted co-operation of those who, throughout the country, are joining in the movement to prevent blindness and save sight.

Naturally, a question in the minds of all at this time is in what ways a program of this nature is related to conduct of the war. In connection with the prevention of blindness, it seems particularly true that the present emergency has not created new problems but, rather, accentuated those already in existence. In this brief statement emphasis is put upon those aspects of the work that have been especially intensified during the past year.

Public and Professional Education

Exhibits at various national conferences have been built specifically around the subject of eye health and efficiency under war conditions. Notable among the conferences, at which the staff gave consultant service, were the meetings of the American Medical Association, the American Academy of Ophthalmology and

* Report given at the Annual Meeting of the National Society for the Prevention of Blindness, December 3, 1942.

Otolaryngology, the National Conference of Social Work, and the National Safety Congress. These meetings, as well as others of a more local nature, for which display and pamphlet material was provided, resulted in many requests for publications and for guidance in formulating educational programs.

Similarly, public warnings and advice about eye care have been released through the press and the radio, the services of co-operating ophthalmologists being utilized in preparation of radio talks as well as of papers later published in and reprinted from THE SIGHT-SAVING REVIEW. The radio is felt, particularly at this time, to be a powerful medium for public education; it is proposed from the 1943 budget to prepare a new, dramatic electrical transcription which will broadcast pertinent messages throughout the United States.

In an arrangement with the American Red Cross, pamphlets have been supplied at cost for use in home-nursing instruction. There has been widespread demand from the local chapters for such material, and for additional advice; in consequence, it has been considered advisable to prepare a special brochure for the purpose, carrying instruction on eye care that it is anticipated will reach through this avenue into many homes in all parts of the United States.

A request from the chief medical officer of an army hospital for data on the preventive aspect of military injuries to the eyes is typical of inquiries received from various arms of the government calling not only for the provision of appropriate pamphlets, but also for individual study and the assembling of reference material. In this connection, mention is made of the outbreak of an epidemic of keratoconjunctivitis extending from the West Coast shipyards into some of the other industrial centers, and of the Society's release of precautionary recommendations to the National Safety Council and to state and territorial health officers.

"I never thought carrots would help me to locate a German submarine," said a patient in the Seamen's Church Institute eye clinic, when learning of the nutritional value of this vegetable in relation to seeing. This may sound extraneous, but it suggests the unusual chance we have now to impress on persons in every walk of life the principles of eye health and conservation.

Worth noting is the series of four two-hour lecture and discussion periods given by the staff this fall for graduates in ophthalmology at New York University College of Medicine. It is wished that such opportunity for reaching newly prepared eye physicians with basic ideas in regard to prevention of blindness could be extended to other medical teaching centers.

It is beyond expectation that the Society alone could, even under the most favorable circumstances, conduct an educational program that would be complete. Rather its function is to blaze the way and stimulate others to carry into their localities the accepted recommendations and advice. To this end, instruction for responsible personnel working under other auspices has remained a part of the program. Institutes for public health nursing supervisors have been continued, though on a somewhat decreased scale because of travel restriction. Preceding the American Public Health Association convention in St. Louis, an institute was given especially for health personnel, in which we were fortunate in having assistance from some of the local leaders.

Last summer, courses for sight-saving class teachers were offered at Teachers College, Columbia University, New York; Wayne University, Detroit; and George Peabody College for Teachers, Nashville, with sponsorship of the Society and service from the Director Emeritus and others of the staff. The course at Peabody College was given under the full-time direction of the Associate Director.

In recent months the Society has participated in several conferences called to consider problems relating to the rehabilitation of those rejected for military service and, as it may become necessary, of men injured through military and industrial service. Though a general program of rehabilitation for these groups is still in the embryonic stage, it is apparent that the Government will assume direct responsibility and that it will look to the national volunteer agencies for guidance available as a result of study and experience in the specialized fields. Material has already been provided from this office.

To summarize briefly some of the activities which might be characterized as routine procedures of the Society: in the past year exhibits were provided to 88 communities throughout the country;

films were loaned on short-time or indefinite basis on 112 occasions; the talking-slide-film on industrial accidents was sent to 207 localities; 700 electrical transcriptions were broadcast over approximately 350 radio stations distributed throughout the United States; and individuals and agencies in 317 cities in 47 states and the District of Columbia were reached with 296,000 publications shipped from the Society's office.

Glaucoma

It has been interesting to find in minutes of the Society dated May 3, 1916, a note to the effect that Dr. Haven Emerson, then New York City Health Commissioner, had asked for an authoritative statement about glaucoma, and suggested warnings of its oncoming. Nothing was given him, apparently, no doubt because of uncertainty as to what such pronouncements should contain, but we have gone a long way since those days, both in learning the possibility of control and in educational technique. The present emphasis on glaucoma is, therefore, not seen as a new need, but it *is* recognized as especially important now when ophthalmologists and others foresee steady increase in the incidence of this disease because of additional worry and emotional strain due to the war. For this reason, the Society has urged, in writing, in conference, and through the press, the value of early medical care and control measures. A statement carrying wartime rules for glaucoma patients has been released; articles calling attention to current developments and findings have been circulated.

The New York City project under sponsorship of the Committee on Glaucoma has progressed. In recent months attention has been given to recruiting and training volunteers to act as technical and clerical assistants. In a course of eighteen lectures which were generously presented by co-operating ophthalmologists, five young women were prepared for service in five eye clinics, thus freeing the overburdened ophthalmologists from some of the technical details involved in eye examinations. Other volunteers are being recruited for training and similar assignment through hospital departments. It is expected that in the next few months a plan may be demonstrated locally which will prove valuable for general recommendation.

Industry

With the great speed-up in industrial activity, the problem of eye accidents is one of immediate concern, and the Society has intensified this aspect of its work, under the supervision of its Industrial Advisory Committee, and has added to its staff the service of a consulting engineer. A study of safety procedures in fifty selected war industries has provided facts on the inadequacy of eye protection; these facts have served as the basis of material distributed in the form of a "Note to Industrial Executives," and other educational media. An increasing number of groups, such as safety councils, departments of labor, manufacturers, and local organizations for prevention of blindness are assuming responsibility not only for carrying further the efforts already started, but also for developing additional joint action leading to improved plant conditions. A pamphlet addressed specifically to women in industry is in preparation, in recognition of the fact that their employment on an increasing scale presents unique problems. Preparation has also been started of a pamphlet designed for the workman and his family.

In its industrial program, the Society is in close touch with the American Medical Association Committee on Industrial Hygiene. Dr. Hedwig S. Kuhn of that committee is a member of the Society's industrial advisory committee, and on request the Society has provided certain data on occupational disability and job classification both to Dr. Kuhn and to Dr. Snell, the American Medical Association industrial committee chairman. Material of this nature has been made available also to the U. S. Employment Service, through its New York branch. The data should be of further help in connection with plans developed by the Federal government or other agencies for the rehabilitation of visually handicapped but seeing persons.

Medical Social Work

The Society has continued close contact with the medical social eye workers trained during the past ten years who are now employed in hospital or community programs for prevention of blindness—about forty in all—and in a way these workers may be considered emissaries of the Society. Satisfactory progress is also

noted in the two demonstrations under way at the University of Kansas and at St. Louis University, both of which end the first of July, 1943.

State Programs

There have been many requests for the Society's assistance in planning state prevention programs, and a number of states have had visits from a staff member, who spent some time in each state in order to help in the classification and study of causes of blindness among applicants for aid-to-the-needy-blind, and to give general advisory service. However, so far as practicable in recent months, the Society has given such assistance in written communication, drawing up outlines for suggested activities in several states contemplating the organization of prevention of blindness services. A fairly comprehensive plan was developed on paper which will serve as a presentation of policies and procedures that can be adapted to the particular situation in any state.

The interest of Lions Clubs throughout the country is not being overlooked, and in a number of instances they are taking an influential part in promoting one or more phases of sight conservation work. An item recently presented to them for national promotion is the musical production of a little poem the Society has used successfully as an appeal, "A Great Gray Elephant," featuring rules for eye care.

Publications

Beginning in 1943, a periodic *Newsletter*, which will be offered to all who are engaged in any form of prevention of blindness, will report developments throughout the country. It is hoped that this will compensate, to some extent, for the lack of field visits during a period when traveling must be curtailed.

The Society is looking forward also to the publication by Columbia University Press, of "The Partially Seeing Child—Educational and Health Services in Urban and Rural Communities," by Winifred Hathaway. This volume is a revision and expansion of the Society's Publication No. 30, "Sight-Saving Classes—Organization and Administration."

It is a pleasure to report that THE SIGHT-SAVING REVIEW continues to make new friends. During the past six months there has been a greater increase in new subscribers than in any other comparable period. This more than makes up for the loss of subscribers who have had to drop their subscriptions for the duration, upon entry into military service.

Conclusion

In presenting a digest of the past twelve months, an attempt has been made to indicate the breadth of present activities and to give an idea of the methods employed in working toward our objective. It is heartening to all who join in this work to read messages like the following, quoted from a recent letter:

"Sometimes, working on such a job as has been settled on me, without any funds being appropriated, the thought comes into mind as to the futility of such effort—then agencies which really try to help, such as you have done, appear, and a person is given heart again. I suppose if just one accident is avoided, just one worker kept producing as a result of the work we are doing up here, we can consider our efforts well repaid."

The Parent's Responsibility in the Detection and Treatment of Crossed Eyes

Isadore Givner, M.D.

PRESENTS symptoms, description of treatment, and possibilities for cure of crossed eyes.

IN DISCUSSING crossed and walled eyes, one must first emphasize the fallacy of a rather common idea that such eyes straighten themselves if left alone. It is true that one sees patients with crossed eyes during their childhood and youth who as they age, lose this abnormality; but, the price of this so-called straightening has been at the terrific cost of the loss of vision of one eye. The deviating eye is less and less used, and its power of sight is reduced gradually to a point beyond the limits of serviceable vision. Since blind eyes frequently have a tendency to turn out, this tendency causes the crossed eye to assume a normal position, and the result is often a straight, normal appearance of an eye which actually has become blind.

In infancy, the eyes usually do not fix upon objects until six weeks after birth; the two eyes do not co-ordinate until the third month or later. After this the eyes should always appear straight either for near or for distant seeing. Because of the undeveloped bridge of the nose in the young child, the eyes sometimes have an appearance of being nearer together than they should be. That this is an illusion may be demonstrated by merely lifting the skin over the bridge of the nose.

Assuming that we have eyes with normal vision to start with, the most important factor in keeping the eyes straight is fusion, or the ability to use the two eyes together. Usually factors that influence this binocular vision bring about the condition of crossed eye. These factors may include refractive errors, congenital weak-

ness of extraocular muscles of the eyes, differences in the size of retinal images, or abnormal conditions in the brain centers governing inward-outward rotation of the eyes.

Refractive Errors

Since the mechanism of accommodation is allied to the inward rotation of the axes of the eyeballs (as in looking at a very near object), an overstimulation of the former in a very farsighted child might alter the muscular balance and throw the eye in toward the nose. Likewise, nearsighted individuals—because of the limited use of their accommodation, particularly for distant vision—might develop an out-turning of one or the other eye.

Congenital weakness of one or more of the muscles which rotate the eye, if the muscles affected are elevators or depressors, may cause one eye to have a tendency to be higher than the other; the constant overwork to keep the eyes even may eventually result in a giving up of the attempt to retain the single binocular vision with a resultant turning in or out of the eye. In a large series of cases reported recently, six per cent showed one elevator to be affected.

Difference in the Sizes of the Retinal Image

The difference in the sizes of the retinal image of the two eyes is a new phase of eye work that is only now being worked out for more practical application.

Abnormal Conditions in the Centers of the Brain

Abnormal conditions in the centers of the brain may affect the inward and outward rotation of the eyes. In this division of causative factors may be placed the cases following sleeping sickness in which, years later, because of damage done to these centers, individuals find themselves unable to roll their eyes slightly inward in order to fix upon a near object. Similarly, overstimulation of these brain centers leads to muscle imbalance and sometimes, consequently, crossed eye.

Signs of Eye Muscle Defects

The age at which many of the patients are first brought to the ophthalmologist is directly related to the keenness of observation

of the guardian or parent. The first evidence of trouble may be an occasional turning of the eye inward or outward that manifests itself only upon tiring of the body, use of the eyes, or acute illness; the appearance most of the time may be perfectly straight. It is at this stage that most correction of a non-surgical nature can be done.

One sign that should make a parent think of the possibility of an eye muscle defect is tilting of the head. Once an individual has developed a way of co-ordinating his two eyes so that a single image results, he will do everything he can to maintain this binocular vision. If some muscle is weak and therefore causes a separation of the images of the two eyes—or a tendency toward their separation—nature swings the head in that position which will more nearly fuse these images. This tilt may be to one or the other side. Sometimes a child will merely turn his head rather than tilt it. The reason for the unnatural position is the same in either case: the turning or tilting will bring the head into a position where the two images can be most successfully resolved into one. Sometimes, if the attempt is too exhausting, nature gives up and turns the head in the position where the images are farthest separated, hoping in this case to give up the fight and use the eyes singly, rather than binocularly.

The double vision that occurs before the attempt is given up will many times occasion intractable vomiting in the child, and if the symptom is not recognized as having its origin in the eye muscles, treatment will be unsuccessful.

An observing mother can many times give great help by her observation of the movements of her child's eyes, for the fear accompanying the first examination by the oculist may make a positive opinion impossible at the first sitting. Of course, in the three-year-old or older child, this aid in observation is not as necessary as in the baby.

Treatment of Crossed Eyes

The treatment of crossed eyes falls into the non-surgical and the surgical approach. In the former class, falls:

1. Correcting refractive errors in the cases where the crossed eye is precipitated by this cause. Glasses can be given to babies of eight months with satisfactory results.

2. Covering of the better-visioned eye by a patch to make the vision of the poorer eye improve by being used more, or
3. The instillation of atropine in the good eye in order to produce the same result.
4. Use of the cheiroscope (a device to develop co-ordination of the two eyes) to develop vision in the poorer eye.

When the vision is improved and fusion training is begun, the aid of the mother is most essential for stimulation of the child's interest, and through her ingenuity the training can be engaged in as a game rather than hard work.

In cases where surgery is indicated in spite of the above attempts, the work of fusion training in many cases is just as important as in the non-surgical cases, until the best degree of fusion, depth perception, is mastered and retained.

Summary

It cannot be too strongly impressed that a crossed eye will definitely make an average child feel that the way other people look at him must mean that he is inferior. To take care of the eyes before this state of mind develops is the ideal. However, many children who have already embraced this defensive attitude can still be brought back to normal thinking if their eyes are corrected before the introversion has become too fixed.

To sum up—the most important factor in keeping eyes working together is good vision. To straighten the eyes mechanically as is done by surgery is excellent as far as it goes, but is not the whole story. Stereoscopic fusion training is needed to keep the eyes straight from then on.

The Forum

THIS section is reserved for brief or informal papers, discussions, questions and answers, and occasional pertinent quotations from other publications. We offer to publish letters or excerpts of general interest, assuming no responsibility for the opinions expressed therein. Individual questions are turned over to consultants in the particular field. Every communication must contain the writer's name and address, but these are omitted on request.

Glaucoma*

I have been asked to tell you the story of glaucoma. Now I ask you, how can such a highly technical story be told to you in such a way that you won't switch to another wave length in less than two minutes from the start? It is just as bad as asking an aeronautical engineer to give you the technical details of the Pratt-Whitney engines that are used in the Boeing Flying Fortresses. Those marvelous machines (and this is not a commercial plug) undoubtedly play a role in your life today. But just how? So I shall try to tell you just how an equally technical affair may or does play a role in your life.

Glaucoma is a disease of the eyes, the cause of which has not yet been discovered. Until the war diverted our activities, some of the best brains in the world were working on that problem and still are in the few odd minutes that can be snatched from the war efforts. When the cause is discovered, the cure will not be far behind.

Unless taken care of by medicine or surgery, glaucoma will cause complete blindness in nearly all cases. In fact, of the 120,000 people in the United States that are blind in both eyes, about 30,000 of them are blind as the result of glaucoma. Just stop for a minute and figure out what that means in hard cash. Every blind person without means is entitled to a blind pension of one dollar a day, every day in the year as long as he or she lives. Thirty thousand people at one dollar each day for the 365 days in the year adds up to almost 11,000,000 dollars a year that the taxpayer has to fork out. Why?

* Broadcast from Station WBBM over CBS, October 13, 1942, at American Academy of Ophthalmology & Oto-Laryngology Convention, and reprinted with permission from *Guildcraft*, October-November, 1942.

Because the disease was not discovered in time. Some figures, published this week, have shown that if glaucoma is discovered early and proper treatment started at once, less than 8 per cent of the eyes afflicted with glaucoma become blind. Does that mean anything? I should think that it means that everybody should try to find out whether or not they have or are in danger of having that trouble.

Now let's stop a minute and see if you belong in the group that ought to take stock of themselves. In the first place comes your age. If you are under thirty, you have my permission to switch over to a dance band. If you are under forty, it might be worth your while to listen a little longer for glaucoma is not unusual in that age group. But if you are over forty, and you don't need to tell how much over, it will pay you to think about your own eyes for a few minutes. If by chance you have glaucoma, you can save yourself many years of needless suffering, both mental and physical, by an early diagnosis and proper treatment.

It is more than silly to tell you what to look for and to try to help you to diagnose your own condition. In the campaign that this and other medical societies have waged to lessen the scourge of blindness from glaucoma, by early diagnosis, describing symptoms and telling you what to look for have resulted in more harm than good. Certain people are so built that they can imagine unto themselves almost any symptom that they read of or hear about, and with the little knowledge that comes from such publicity, they develop mentally the finest case of this, that, or the other disease that you can imagine. That means that the doctor has to spend an infinite amount of time and care in ruling out the condition that these imaginative people think they have. And today with the armed forces using an ever-increasing number of medical men, the overworked doctor just hasn't the time to take care of imaginary ills. Consequently I am not going to tell you enough about glaucoma to lead you to think that you have it and thus make your overly busy eye physician waste a lot of his time to find out that you haven't and even more of his time in convincing you that you haven't.

If you are over forty, the chances are that you need, or will need in the very near future, glasses for reading, writing, and 'rithmetic, not to mention sewing and gin rummy. Only about 20 per cent of you are going to go to an eye physician to get your glasses fitted. When you do, his routine examination of your eyes will pick up a glaucoma if it is present, even in an early stage. The next 40 per cent of you will get your glasses fitted by an optometrist or an optician. Many of these non-medical refractionists are extremely skillful and can detect an early

glaucoma; but unfortunately, the majority cannot. The remaining 40 per cent of you are going to buy glasses over the counter. So you see, about 80 per cent of all the people past forty who get glasses do not have the benefit of an examination that would detect the presence or absence of that disease known as glaucoma.

However, practically all of you, except for a few foolish faddists, do consult your family doctor with more or less regularity. In addition to bringing your babies and helping you bring them up and taking care of the family aches and pains, both real and imaginary, he is oftentimes your counsellor in other than medical matters. For he knows you better than you know yourself. Furthermore, he pauperizes himself by trying to keep your family well and healthy by inoculations and vaccinations and warnings and quarantines against infectious diseases, and so forth and so on. Now there is being wished on him the additional job of trying to prevent his people from losing their sight from glaucoma.

In his days in medical school, your doctor learned about the commoner diseases of the eye and what he could do and what he could not do about them. But in the hurly-burly of a busy practice, he has not been able to keep in touch with the technical refinements that have developed in the various specialties, particularly that of diseases of the eye. His patients have been given the benefit of those advances in knowledge by being referred through him to the various specialists, according to what was wrong with them. But now the eye specialists are going back to the family doctor and humbly asking his help to prevent the so unnecessary blindness from glaucoma by detecting that disease before it can do irreparable damage. And you, the patient of the family doctor, can be of enormous help to that cause.

You ask how? Simply by asking your doctor to make a cursory examination of your eyes as a part of his routine physical examination of your body. Tell him about the headaches you may have after being in the dark for some little length of time; ask him why you have so much trouble about finding a vacant seat at the movies, which means that you can't adapt your eyes to the dark as rapidly as do other people; tell him that your sight is not quite as sharp as it formerly was, and ask him to send you to an eye physician for examination; and ask him to feel with his fingertips through your closed eyelids whether your eyeball is harder than it should be. And finally, if he is accustomed to the use of an ophthalmoscope, ask him to look at your optic nerves and see if they show any trouble. If you have glaucoma already developed, he will discover it. If you are threatened with glaucoma (and there is such a condition as pre-glaucoma),

he will be suspicious and will send you to a specialist to confirm or refute his suspicions.

Let's suppose that you have glaucoma and that your family doctor has discovered the condition during the course of the routine examination that he makes of you every six or twelve months. What are you going to do about it? In the first place, have your doctor send you to a competent eye physician. Don't take the advice of a lady whom you happened to talk to on the bus on your way downtown and who told you of the perfectly marvelous cure for blindness that Doctor X performed on the second cousin of her grocer. If Doctor X is a good man, your doctor will know about him and send you there, if you so desire; if he doesn't know about this miracle worker, he will send you to a good man whom he does know. If you can, select a man who holds the certificate of the American Board of Ophthalmology, that certificate meaning that his fellow doctors recognize him as a competent eye physician.

Your eye physician will start by giving your eyes a thorough examination from front to back and inside and out. He will measure the amount of your vision and whether or not you need glasses; he will examine to see if your side vision has been affected and if so, how much; he will try to find out whether or not you have any blind spots in the central part of your sight; he may measure to determine whether you see as well in the dark as you should; he will look inside your eye with a little electric light; and finally he will put a small instrument on your eye and measure the exact degree of pressure within the eye. All this may require several sittings. Only after he knows all there is to know about your eyes will he outline the course of treatment. Now, every case of glaucoma is a law unto itself and no two people respond exactly the same to the various medicines that are used. So it will take some little time for your eye physician to determine how your eyes react and just how much or how little treatment is required to hold the disease in check.

If you have glaucoma, you had better learn now than later that glaucoma cannot be cured, but can be arrested. In other words, the disease will always be with you and the least slip in treatment on your part means danger for the future of your eyes. Unfortunately, glaucoma is not like a stomachache, meaning that you can tell whether you have it or not, and only your eye physician can tell whether you or your glaucoma has the upper hand in the battle. So it is absolutely necessary that your eyes be examined thoroughly at such regular intervals as your eye physician may dictate.

If this talk has been the means of saving only one of you from blindness from glaucoma, then it has

been more than worth while. If it has made others of you think enough to ask your family doctor to see whether you are in danger of that disease, then it has paid big dividends. But if it has aroused enough of you to spread the gospel that the prevention of blindness from glaucoma is possible by the early detection of glaucoma, then the American Academy of Ophthalmology and Oto-Laryngology will feel that its existence is justified.

—HARRY S. GRADLE, M.D.
Chicago, Ill.

News of State Activities

THIS section is devoted to the reporting of sight conservation activities carried on by official and voluntary agencies throughout the country. It presents information supplied by these groups, and serves as a medium for exchange of experiences. Only brief and timely items can be used, because of the limitations of space.

Illinois

"Here's a news item to warm your hearts! The W.P.A., working under our supervision and using all our tried and true methods, has tested the vision of 250,620 children this past year; of that number, 25,524 were found to have varying defects of vision, and within the last 12 months, 19,300 children have had their eye defects corrected. With a staff that was cut 50 per cent as of July 1, 1941, and another 50 per cent as of July 1, 1942, more children had their vision corrected than in any previous year.

"This year we were able to get something for this project which was always our fondest dream, and that was medical endorsement. The Eye Section of the Illinois Medical voted such approval in May. It was something like joining the church just before dying, as the W.P.A., which has contributed so much to prevention of blindness in this State, is suffering major slashes every day now.

"Perhaps in gratitude to them for their understanding and generosity we should review today what they have done for the eyes of the school children of Illinois in the past six years.

1,428,729 children have had their vision tested.
161,888 eye defects have been discovered.
72,107 children had their eye defects corrected.

"That is a powerful record in sight saving for the W.P.A. to bequeath to us, and we shall never cease to be grateful to them for the fire they have kindled. There has never been a moment in the past six years when they have failed to give our work every break possible within the framework of their rules, never a time when they have been anything but friendly to our suggestions, never an instance when they weren't as anxious as we to have the work of

the very highest quality. Their reward is really in the clear, straight eyes of little children of this State."

—From the annual report of Illinois Society for the Prevention of Blindness, Chicago, Illinois

Kansas

"The Bureau of Services for the Blind, Kansas Department of Social Welfare, announces the coming to its staff of Miss Edith E. Gutzeit in the position of Medical Social Eye Consultant.

"Miss Gutzeit was graduated from Denison University, Granville, Ohio. She enrolled in the School of Applied Social Sciences at the University of Pittsburgh, and over a period of time took supervised field work and courses leading to an M. S. degree in Social Administration, which was awarded in June, 1941.

"Miss Gutzeit was employed as a case worker at the Mothers' Assistance Fund, Pittsburgh, Pennsylvania, for two years, following which she took the course in medical social eye work at Washington University sponsored by the National Society for the Prevention of Blindness. Upon completion of this course in June, 1938, she was employed as a Medical Social Eye Worker, first in the Pittsburgh branch and later in the Dauphin County branch of the Pennsylvania Association for the Blind. She was in charge of the Prevention of Blindness Department in the Dauphin County branch until she accepted her present position July 15, 1942.

"This Bureau feels fortunate in having Miss Gutzeit as a staff member and we are confident that she will perform effective work in the continuation and expansion of restoration of sight and prevention activities of this agency."

—Services for the Blind, State Department of Social Welfare of Kansas, Topeka, Kansas

Minnesota

A survey of visual health of school children in rural Hennepin County was initiated by the Minnesota Society for the Prevention of Blindness.

"Rural Hennepin County was selected to obtain this representative illustration. Since it was impossible to examine all the children in this large county, two methods were used:

1. Schools chosen were well distributed geographically and well balanced as to income groups.
2. A 'screening' examination was made by county health nurses in chosen schools.

"To get a cross-section of the whole county, one village school under the supervision of a school nurse was selected in addition to

the rural schools under the county nurses' supervision. Examinations have all been carried out at working centers in the schools.

"On the spring survey from April 8 to May 8, two doctors were assisted each day by a nurse and two local women. Histories of the visual difficulties were obtained from the children, parents, and teachers. Only children with vision of 20/25 or worse, and those with normal vision but having ocular symptoms, were referred for ophthalmological examination. Although the final summary will not be announced until the completion of the survey in October, a few facts may interest you.

"This survey has included 31 schools with a total enrollment of 4,443 children; 3,160 children were 'screened out' by county nurses as not requiring ophthalmological examinations.

(Percentage given on 4,443 children—total enrollment)

1,283 were found to require ophthalmological examinations (28.87%).

184 not examined, refused or preferred their own doctors (4.15%). (This percentage is surprisingly low; illustrates the excellent co-operation of PTA, county nurses and teachers.)

1,099 total number of children referred for examination (24.7%).

1,086 basic number—13 records discarded because of inaccuracies.

688 cases requiring immediate refraction or rechecking (15.77%).

561 advised immediate refraction (12.87%).

127 watching and rechecking in 6 to 12 months (2.9%).

46 with possible systemic rather than ocular difficulties (1.36%).

513 with normal vision, but with possible ocular difficulties and those examined by parents' request (11.48%).

344 of this group—no treatment advisable (7.68%).

169 refraction or other treatment advised (3.8%).

"A decided effort was made to provide treatment of all children examined and found in need of therapy. If the child's parents were financially able, the child was referred to his family physician for treatment or advice. If the family physician does not perform refractions the physician was provided with a list of ophthalmologists recognized by the Hennepin County Medical Society to whom he could refer these children. The ophthalmologists of Hennepin County agreed to make suitable financial arrangements in recommended cases in which finances were a problem. Children eligible for care at University Hospital or other charitable institutions were referred to them; if possible, arrangements were made by the school nurses to get the children to such facilities. If children were not

eligible and financial conditions inadequate, the PTA association in many cases assumed the financial responsibility for the care of the children, on a loan basis. . . .

"A 'follow-up' system was set up by the Hennepin County public health nurses, who made the excellent preparations for the survey, and who contributed much time and effort to its success. Each nurse has a copy of each recommendation made for children in her school district. They have offered to follow up each individual case and to see that the recommendations are carried out.

"A Summer Follow-Up Program was carried out by the Hopkins school nurse in June in the Hopkins, Harley-Hopkins and Glen Lake districts. (Other visits were made by county nurses.)

283 home visits—which included 372 children referred for further examination.
196 were referred for further care immediately, or before school next fall.
176 were found not to need refraction at the present time.
95 who were examined are already wearing glasses.
43 of this group were well fitted.
28 had been fitted by oculists—15 had been fitted by optometrists.
52 should be refracted again this summer.
11 children have already been fitted as advised by the survey.
4 fitted by oculists—7 fitted by optometrists.
5 families were given the privilege of borrowing from the school loan fund.

Final reports will be made in the fall giving an account of the results of the survey in this district and recommendations which will include plans of the family for care, cost of the care and the relief of symptoms. . . ."

—*Minnesota Society for the Prevention of Blindness and Conservation of Vision, St. Paul, Minnesota*

North Carolina

"*Mecklenburg Association Utilizes Community Resources in the Prevention of Blindness Program.*—In a city and county as large as Charlotte and Mecklenburg, and with a well-organized social welfare program, there is an essential need for organized clinics of all types. From the beginning of the Association for the Blind, it has used the method of calling directly on local ophthalmologists to service the cases in their offices. In the beginning this system worked very well, and the doctors co-operated to the fullest extent; but as the prevention work became more organized, and there was a better community understanding of eye care and eye health, the

need was too great for private ophthalmologists to handle in their offices. These men saw the need and were willing to help with any plan that would take care of this problem.

"This need was called to the attention of a board member of the Variety Club of Charlotte. This board member had served as a Board Member for the Association for the Blind for many years. He well understood the Agency's problem of getting services for the needy eye cases. The Variety Club is a civic organization composed of show people of both North and South Carolina. This need, as presented by their board member, aroused their interest to do something for children, and they investigated the plan and decided that Charlotte needed an Out-Patient Eye, Ear, Nose and Throat Clinic. . . . After a great deal of studying and investigation, plans were worked out to establish an Eye, Ear, Nose and Throat Out-Patient Clinic that would work in co-operation with all established private and public social work agencies in the community. The Clinic was opened March 13, 1942.

"The Association for the Blind loans a part of the executive secretary's time to the Clinic to supervise the intake and follow-up case work until the Clinic can obtain the services of a medical social worker with special training in eye work. All expenses, such as rent, equipment, medicine, services, and payment of the supervising ophthalmologist's salary is paid by the Variety Club. The Clinic is located in the basement of the Professional Building. The Clinic has waiting rooms and treatment and refraction rooms for both white and colored patients, and a nose and throat treatment room.

"On clinic days the Clinic has the services of two ophthalmologists and one ear, nose and throat man, a volunteer case aid, the Association's office secretary, and the Association's executive secretary. The patients report by appointment, so that the Clinic will not have a few patients one clinic day and be overflowing the next clinic day. Every agency in the community knows the clinic days and they make application for their clients at least a week in advance. That is, unless there happens to be an emergency case."

—*Mecklenburg County Association for the Blind, Inc., Charlotte, North Carolina*

Oklahoma

"The Committee on the Conservation of Vision and Hearing of the State Medical Society has had several conferences with representatives of the Department of Public Welfare, the State Health Department and the Oklahoma Commission for Crippled Children in respect to examining eyes of needy children. This plan has been agreed upon:

"Recommendations for the examination will be made by a phy-

sician representing the Health Department or a physician in private practice. Investigation of the family's ability to pay will be made by the State Department of Public Welfare. The county director of public welfare will issue authorization for the examination when financial need is established.

"The eye physician making the examination will be entitled to charge not more than $5.00 for his examination, including refraction whenever necessary. It is the Committee's feeling that if, in the physician's opinion, the examination does not warrant a fee of $5.00, the charge will be correspondingly less. Claim for services will be filed upon a form prepared by the Oklahoma Commission for Crippled Children against the Department of Public Welfare.

"If glasses are found to be necessary, the examining eye physician will sign an appliance order and attach his prescription.

"The order, with the prescription, will be mailed to the Oklahoma Commission for Crippled Children at 313 Franklin Building, Oklahoma City. The Commission, in turn, will indicate the proper encumbrance and forward the order to a convenient optical company who will supply the glasses at clinical rates. Eye physicians are encouraged to suggest preferences in respect to the optical company.

"For the present, the Committee has suggested that those eye specialists approved by the Committee on Standardization under authority of the Oklahoma law for crippled children for work in approved hospitals be accepted for examining children under the proposed plan. Other eye physicians who wish their names added to the approved list will be asked to file applications for approval with the Committee on Standardization. Address Dr. Earl D. McBride, chairman, Committee on Standardization, 313 Franklin Building, Oklahoma City, for application form. . . ."

—*Committee on Conservation of Vision and Hearing, State Medical Society, Oklahoma City, Oklahoma*

Pennsylvania

"In the interest of furthering the awareness of prevention of blindness in the field of nursing, the Prevention of Blindness Department of the Pennsylvania Association for the Blind invited Miss Eleanor W. Mumford, R.N., Associate for Nursing Activities of the National Society for the Prevention of Blindness, to Pittsburgh in September. A meeting was held in the Association's recreation room, where Miss Mumford was presented to the invited group. The heads of the various schools of nursing, the University of Pittsburgh, and Duquesne University Schools of Nursing, and representatives of school, State and public health nurses were present. A committee was formed to study the eye problems con-

fronting nurses in the various groups, with the plan in mind of incorporating more eye teaching into the schools of nursing. Further meetings will be held, and Miss Mumford will return to Pittsburgh periodically to assist in the planning. It is hoped that such a project will contribute greatly to awakening the interest of local nurses in the prevention measures we are fostering."

—Prevention of Blindness Department, Pittsburgh Branch, Pennsylvania Association for the Blind, Pittsburgh, Pennsylvania

South Carolina

"During the past year, the Division for the Blind of the South Carolina State Department of Public Welfare has conducted eight screening clinics. One of these was held in a school situated in a textile village, in compliance with a request from the manager of the mill. Every child found to be in need of ophthalmological examination and other additional treatment was given these services by the mill. In another clinic, the necessary follow-up was given by the local parent-teachers association. The local Lions were responsible for necessary follow-up of still another clinic.

"In addition to the above, the Division has been responsible for 363 ophthalmological examinations this year and 95 operations.

Operations

Cataract:	
Extractions	26
Needlings	24
Discissions	6
Conjunctival flap	2
Dermoid tumor	1
Ectropion	1
Enucleations	9
Iridectomies	5
Plastics	4
Pterygiums	13
Ptosis	1
Removal of foreign body	1
Scleral trephine	1
Strabismus	1
Total	95

Results of Operations

Successful (restoration of vision)	44
Successful (prevention of blindness)	36
No improvement of vision	5
Incomplete	10
Total	95

GLASSES SECURED BY DIVISION FOR THE BLIND IN PROGRAM OF PREVENTION OF BLINDNESS AND CONSERVATION OF VISION

37 pairs for clients whose vision was poorer than 20/200 (myopia).

56 pairs for clients whose vision was poorer than 20/200 (hyperopia).

Included in the above, 8 were totally blind in one eye.

15 pairs for clients whose vision was between 20/70 and 20/200 (myopia).

48 pairs for clients whose vision was between 20/70 and 20/200 (hyperopia).

Included in the latter, 6 were totally blind in one eye.

28 pairs were secured for clients whose vision was better than 20/70. However, conditions were considered progressive. 10 of these were totally blind in one eye.

25 pairs of glasses secured as post-operative treatment (cataract).

11	resulted	in	giving	vision	of	20/40
7	"	"	"	"	"	20/70
4	"	"	"	"	"	20/30
1	"	"	"	"	"	20/25
1	"	"	"	"	"	20/20
1	"	"	"	"	"	20/200

1 pair of glasses secured with frosted lens.

1 pair of colored glasses with high correction in clear pupillary area, secured as an experiment; little improvement in vision obtained.

2 pairs of extra frames secured.

"The State Department of Public Health forwards the Division for the Blind of the State Department of Public Welfare all cases of ophthalmia neonatorum which are reported to them by physicians throughout the State. Every case reported this past year was followed up, with the following results:

Completely recovered	14
Reported in error	6
Unable to locate (name not given and physician reporting case died)	1
Outcome doubtful, although all possible treatment is being given	1
Infant died	1
Total cases reported	23

"One of the most interesting projects which the Division has undertaken during the past year was that of making a survey on

causes of blindness in the State of South Carolina. This study was made by the medical social workers and approved by Dr. Kirby Bryant, former assistant of Dr. Rice, of the Social Security Board, Washington, D. C. The survey included 800 recipients of Aid-to-the-Needy-Blind, as of December 31, 1941. The standard classification used was developed by the Committee on Statistics of the Blind, sponsored jointly by the American Foundation for the Blind and the National Society for the Prevention of Blindness."

—Division for the Blind, South Carolina State Department of Public Welfare, Columbia, South Carolina

Tennessee

"*Sight Conservation Activities in Tennessee from May 1, 1942, to November 1, 1942.*—During this period 98 persons, 68 being children and 30 being adults, have had varying amounts of sight restored to them in one or both eyes, either by surgery and glasses, surgery alone, treatment, or by glasses alone. This brings the total number of sight restoration cases during the 4½ years in which the Sight Conservation Service has been in operation to 915, the majority being children.

"Also, during this period, 58 persons, 48 being children and 10 being adults, either have had or are having total, occupational, or partial blindness prevented for them in one or both eyes. The various causes from which this blindness has been or is being prevented are: amblyopia and hyperopia, 25; progressive myopia, 7; amblyopia and myopia, 7; sympathetic ophthalmia, 3; congenital cataracts, 3; congenital optic atrophy, 3; amblyopia and mixed astigmatism, 2; syphilis, 2; trachoma, 2; hemorrhagic purpura, 1; optic neuritis, 1; congenital amblyopia and hyperopia, 1; and pterygium, 1. This brings the total number of persons for whom total, occupational, or partial blindness in one or both eyes, either has been or is being prevented, during the life of the Service, to 506.

"The teacher-training course for sight-saving class teachers organized by the Service for Tennessee and other states was given at George Peabody College in Nashville, the course beginning June 20 and terminating August 1, with Mrs. Winifred Hathaway as director, Mrs. Dorothy Bryan as the demonstration sight-saving class teacher and the Director of the Sight Conservation Service, as the ophthalmic lecturer. Ten teachers and one public health nurse were trained in this course, five teachers being from Tennessee and one each from Massachusetts, Missouri, Florida, Illinois, and Minnesota; and the public health nurse was from Washington, D. C.

"During this period 37 seriously visually handicapped children

eligible for enrollment in sight-saving classes were found, bringing the total number of children found by the Service to 273, or about 18 per cent of the number estimated by the Service to be present in the state.

"In September three more sight-saving classes were established, one being in Chattanooga to care for visually handicapped children from the seventh through the twelfth grades, and one each in Davidson and Sumner Counties to care for children in the first six grades. The equipment for the Chattanooga class was furnished by the Chattanooga Lions Club and for the Davidson and Sumner County classes by the respective county school boards. This brings the total number of sight-saving classes now in operation in the State to eight; this places Tennessee in a tie with Louisiana, which State had been in the lead in the South with these classes for many years.

"During this period, in addition to the twelve ophthalmic lectures given by the Director of the Service in our sight-saving class teacher-training course, six other talks were made, two before Lions Clubs, one before the Lions State Convention at Lafollette and one each to a parent-teacher group, a teacher group at Peabody and a city school board. . . . It is estimated that approximately 410 persons were reached by these talks and lectures.

"Also, in an effort to disseminate information to the general public and the medical profession the Service has distributed to various medical and lay groups 285 mimeographed copies of the survey of the 3,975 cases of blindness and 400 copies of its publication, 'Essential Facts Which the General Public Should Know About Sight-Saving Classes, the Needs, and the Advantages to Tennessee for This Type of Specialized Education.'"

—*Sight Conservation Service, Tennessee Department of Public Health, Nashville, Tennessee*

Washington

"We thought that perhaps in your next issue you would want to include a notice about the vision-testing pamphlet which is being sent out by the Division for the Blind in Washington as instructions to both teachers and public health nurses for their use in vision testing of school children.

"This pamphlet gives detailed instructions on equipment; preparation of equipment and knowledge necessary for vision screening and the follow-up is included in this pamphlet.

"A definite interest is being taken by the Department of Education through their school supervisor working directly with the Division for the Blind and the public health nursing services, to-

ward the end that school children will have adequate eye tests and necessary follow-up care for their eyes with a complete understanding, by both the teacher and the parents, of any eye disorder."

—Division for the Blind, Washington Department of Social Security, Olympia, Washington

West Virginia

"The following is a summary of the year's activities on conservation of vision in West Virginia:

"The Committee from the State Medical Association consists of Dr. V. E. Holcombe, Charleston, W. Va., Chairman; Dr. Welch England, Parkersburg, W. Va.; and Dr. R. A. Thomassene, Wheeling, W. Va.

"The state institutions for the blind have been visited by the chairman. Information is being obtained as to classification of cases of blindness as to pathology and to educational and rehabilitational programs in operation.

"A survey of industrial plants is under way to ascertain the following facts:

"1. Whether there is in operation in the plants a systematic plan for examination of eyes of employees and supplying them with industrial glasses.

"2. Whether attention is paid to painting interiors with appropriate colors, to furnish maximum vision within plants.

"3. Incidence of eye injuries, average length of disability, and percentage of permanent disability.

"An article is in preparation for the *West Virginia State Medical Journal*, discussing the foremost causes of blindness, namely: (1) Industrial accidents; (2) acute glaucoma; (3) ophthalmia neonatorum; and (4) trachoma."

—Committee on Conservation of Vision, State Medical Association, Charleston, West Virginia

Note and Comment

Inter-American Aspects of Prevention of Blindness Discussed at Annual Meeting.—Several hundred leaders and workers in prevention of blindness from Latin America as well as North America participated in the Annual Meeting of the National Society for the Prevention of Blindness, December 3, at the Hotel Roosevelt, New York City. The subject under consideration was Inter-American Aspects of Prevention of Blindness. The principal speaker was Dr. Moacyr E. Alvaro, Secretary General, National Committee for the Prevention of Blindness of Brazil, whose paper, "Latin American Developments in Prevention of Blindness," is published in this issue of the REVIEW. Other speakers were Dr. William F. Snow, General Director, American Social Hygiene Association, and Dr. Albert Dreisbach, who represented the Office of the Co-ordinator of Inter-American Affairs.

In connection with the meeting, an all-day exhibit of sight conservation material from representative Latin and North American countries was held which attracted considerable attention. Argentina was represented by an impressive display of striking posters on trachoma control, prevention of ophthalmia neonatorum, eye hazards during fiestas, industrial eye problems, and school eye hygiene. This exhibit was provided by the Patronato Nacional de Ciegos, under the sponsorship of the Argentine Ministry of Justice and Public Instruction. Other countries represented by exhibits or personal delegates were Brazil, Canada, Mexico, Puerto Rico, and the Inter-American Safety Council representing a number of Latin American countries. The National Society for the Prevention of Blindness presented exhibits dealing with industrial eye accidents, glaucoma, and other critical eye health problems of North America.

Attending the meeting and remaining for further conferences was Dr. Luis Sanchez Bulnes, Director of the Mexican Society for the Prevention of Blindness, who indicated that the gravest problem faced by an organization working to prevent blindness in Central or South America is the illiteracy and superstition so prevalent in

certain regions. In an interview, he described the work of his organization since its founding in 1918. He said, in part:

"In 1926 our first hospital was inaugurated. As the number of patients increased, however, this hospital—equipped with only four beds and the instruments to work with—was found inadequate, and in 1939 a new hospital was built, which has all the advantages of any modern eye hospital. Here we treat between 200 and 300 patients daily, all of whom are too poor to pay anything and who are consequently treated without charge.

"In order to extend assistance to the furthermost regions of the country, we instituted in 1941 a traveling clinic service. Each of the ambulances which comprise the service covers three states of the Republic, on carefully studied routes and schedules. The routes have been planned to include villages farthest from the main highways, in order to provide medical eye service to sufferers who, by reason of their poverty or ignorance, would never reach our hospital. These ambulances are veritable traveling laboratories. In each there are two physicians, a nurse, a chauffeur, and all the necessary medical supplies, together with educational posters and literature. The physicians keep records of the eye diseases predominant in each region they visit, conduct lectures on ocular hygiene in schools and workshops, distribute the educational material, and give away to women of the towns outfits specially prepared for the application of the Credé method.

"Difficult and complicated cases are continually being presented to us both in the field and at the hospital. It is therefore of utmost importance that the latest scientific discoveries and methods of treatment be available to our ophthalmologists. We are hoping to obtain one or two postgraduate scholarships for this purpose. Another of our hopes is eventually to found a school for the education of nurses in ophthalmological work, since there are unfortunately no nurses specializing in eye care and no school in Mexico where they can be trained to do so.

"In order to increase the efficiency of the technical personnel of our institution, we have done the following:

"a. Formed a medical society within the hospital, in which each physician undertakes to present an original scientific work on ophthalmology at least once a year.

"b. Required that, during their first two years in our hospital, the physicians must pass three examinations a year, so that they may make a methodical study of ophthalmology.

"c. Sent, annually, the physician whose work has been most meritorious, for one or two months' study at an ophthalmological center in the United States.

"Ten doctors, six nurses, and a woman superintendent comprise the hospital personnel. It is important to note that, first, none of the physicians charge for their services and, second, since the date of its foundation the Association has only occasionally had any official aid.

"Beside the services for external diagnosis and hospitalization of surgery cases for which the hospital has facilities, we have been able to establish the only organized service in Mexico for photography of the back of the eye and for photomicrography of the anterior segment of the eye. But our accomplishments are dwindled by the enormity of our task. For example, our present resources are really much too slender, in spite of the generosity of our many friends, to make effective our campaign against the dreaded onchocercosis (an eye condition caused by infection with a filarious worm) which claims an appalling number of victims in certain regions. This scourge is only one of the problems we face in this country which do not exist, or exist to a much lesser extent, in the United States. Poverty, illiteracy, superstition, fear—these are even graver obstacles."

Although unable to be represented, the Uruguay Ministry of Public Health sent an extensive report on the activities in blindness prevention and in the control of trachoma. According to the report, the National Commission for Prevention of Blindness was established in 1935 as a part of the Ministry of Public Health. The aims of the Commission were given as follows:

"a. To study the extent and the causes of blindness in this country.

"b. To propose prophylactic measures tending to combat this evil.

"c. To propose the improvements of the services and installations for the best development of this action.

"d. To assist the Ministry of Public Health in all details related to the attendance of the blind."

In 1941, the Uruguay Government reorganized the Commission into the "Blindness Prophylaxis Centre," which includes also the Centre of Struggle against Trachoma. The Program of Action of the Blindness Centre is quoted below:

"1. Revision of the Blind Census initiated by the former National Commission, to take a nearer view of the causes of blindness in the country.

"2. Prevention of Blindness combatting its principal causes, to wit:

A. Ophthalmia neonatorum.
B. Trachoma.
C. Labor ocular accidents.
D. Lack of attendance, or undue or insufficient attendance of grave ocular diseases.

"3. Dispositions and regulations on Visual Hygiene and Conservation of Eyesight:

A. Rational illumination of schools, shops, manufacturing plants, and other places of work in common.
B. Improvement and extension of Sight-Saving Classes. Scholarships in the United States for Uruguayan teachers.
C. Vigilance in the fulfillment of the regulations upon the commerce of optics and the profession of optician.
D. Protection and help to the blind, and to persons in danger of losing their eyesight.
E. Institution of the Social Service in Ophthalmological Clinics."

Other countries sending greetings and messages to the Society on the occasion of the meeting were: Colombia, Cuba, Dominican Republic, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Newfoundland, Nicaragua, Panama, Santo Domingo, and Venezuela.

War Eye Injuries.—A detailed and timely Symposium on War Medicine, "War Injuries of the Eyes," by Conrad Berens, M.D., and Edward Hartman, M.D., appears in a recent issue of the *Journal of the Medical Society of the County of New York.* Eye injuries encountered infrequently under normal peacetime conditions are described, such as complete destruction of the eyeball, hemorrhages with loss of vision and late optic atrophy following severe explosions, and indirect traumatic lesions of the eye resulting from gunshot wounds of the face. Procedures formulated here and abroad for treating burns of the eyelids and of the eyeball are listed; cod liver oil is used on eyelid burns in Germany and in Great Britain gentian violet and silver nitrate. The use of tetanus antitoxin in all cases of burns and wounds is strongly recommended, as well as the local and general use of sulfanilamide or sulfadiazine.

Visual Standards for Motorists.—In a year of war, the United States has suffered approximately three times the number of casu-

alties on the streets and highways that it has on battlefield and ocean. Dr. Lowell Selling, writing in a recent issue of the *Journal of the American Medical Association*, feels that the ophthalmologist can fill a valuable place in the prevention of such needless mortality. First, he can continue work on the establishment of visual standards —standards which are adaptable to change if they are found not to be closely correlated to the driving situation. The Snellen charts, for instance, devised to detect reading ability at a distance of 20 feet, have only one specific corollary: the ability to read direction signs on the road in time to follow instructions, such as bringing the car to a stop. Chart visual acuity has little to do with the ability to judge speed and distance of a large moving object, or to predict the spatial conduct of another driver. Secondly, Dr. Selling suggests, the ophthalmologist should make an evaluation of many individual cases, so that future driving can be predicted from the whole picture rather than from the point of view of visual acuity alone. In expressing an opinion as to the driver's potential dangerousness, the ophthalmologist must be careful to consider the possibility of many influencing factors other than visual acuity. The candidate for a license might be extremely sensitive to glare; he might have a photophobia; or he might have scotomas that could cause a blind reaction in a moment of crisis.

"Third, an educational rephrasing of the whole picture is necessary in order to minimize some of the superficial aspects of tests of a driver's vision." Color blindness, monocular vision, and mild restriction of the visual field may not be dangerous handicaps. On the other hand, emphasis should be laid on the need for restricting the driving of individuals with acute or chronic conditions which are of significance in the driving field. All driving restrictions on the basis of vision should be made by the ophthalmologist, if possible, rather than by even the trained lay examiner.

Diet in Experimental Cataract.—Several types of experimental cataracts have been produced in animals by feeding them a diet lacking in riboflavin, or by excessive feeding of sugars in a diet otherwise correct. Recently, detailed studies have been made of the effect upon the eyes of a diet deficient in tryptophane, one of the essential amino-acids. A group of young rats was given a diet

containing all the necessary food elements except tryptophane. Over 90 per cent of the rats developed cataract of a type which could easily be distinguished from vitamin G-deficiency cataracts and from any of the excess-sugar cataracts.

Source Material on Public Health.—Workers in prevention of blindness will be interested to know of a service offered by the National Health Library, maintained by the National Health Council, of which this Society is a member. An annual subscription price of $2.50 brings to the subscriber the *Library Index*, a weekly listing of articles on public health—including sight conservation—selected from over 500 current periodicals. A $10 yearly membership entitles the holder to the privileges of using the National Health Library reading room, receiving reading lists and reference information on request, and borrowing books and pamphlets, in addition to receiving the weekly *Library Index*. Inquiries may be directed to the National Health Library, 1790 Broadway, New York, N. Y.

Social Hygiene Day, February 3, 1943.—Carrying on its usual co-operation, the Society distributed the following release in connection with the observance of National Social Hygiene Day:

"Calling attention to the fact that syphilis and gonorrhea have been responsible for the loss of sight of thousands of men, women and children in the United States, the National Society for the Prevention of Blindness is urging widespread observance of National Social Hygiene Day on February 3.

"'This year,' said Mrs. Eleanor Brown Merrill, Executive Director of the Society, 'we have a special interest in the campaign against these diseases because their spread is a form of sabotage which impedes the war effort. The fight to control syphilis, which has been carried on so vigorously for a number of years by the United States Public Health Service and the American Social Hygiene Association is more important now than ever before.

"'There are approximately 200,000 blind persons throughout the country, and it is estimated that more than 15 per cent of those who must walk in darkness lost their sight because of syphilis or gonorrhea. It is obvious, therefore, that there is a close relationship between the movement for prevention of blindness and the drive to stamp out these diseases.

"'Although one cannot estimate in terms of dollars and cents

the tragedy that enters every home in which a person has lost his sight, it is well known that the cost of syphilitic blindness to the victims and to the taxpayers amounts to many millions of dollars annually.

"'Thousands of babies are born with congenital syphilis every year, and most of them develop a serious eye condition at some time in early life unless they receive adequate medical care. Fortunately, prenatal syphilis is preventable if the expectant mother begins treatment in the early months of pregnancy. We must bring this reassuring message to every expectant mother, for prevention is so much easier than efforts to cure.

"'Another point which needs emphasis is that the eye hazards of industry are greater when workers are suffering from syphilis. The presence of this disease increases the severity of eye injuries; a little cut or bruise of the cornea that would otherwise pass unnoticed may develop into a serious condition if the worker has syphilis. This is not only sad from the standpoint of the individual, but serious in view of the need to maintain and to increase our industrial production to assure the earliest possible victory in the war.

"'To keep America strong we must take advantage of the scientific advances that can help us control these diseases and safeguard eyesight. An important step in this direction is the extensive program of public education which is scheduled for National Social Hygiene Day on February 3.'"

The Society will, of course, have an exhibit at the New York Meeting to be held at the Astor Hotel, and extends an invitation to all prevention of blindness workers in the vicinity to attend.

Incidentally, readers will be interested to know that the American Social Hygiene Association is supplying army camp libraries with reading material in the field of social hygiene, selected from a list drawn up by the army.

The Eyes of the Airplane Pilot.—Intensive efforts to cut in half the number of airplane accidents by insisting that pilots meet stiff physical and particularly visual requirements came about as a result of the discovery long ago that a majority of accidents is due to pilot failure rather than machine failure. For example, it is felt that there is a definite relation between poor landings and borderline depth perception. The pilot with esophoria is likely to judge

the ground to be farther away than it actually is and run the nose of his plane into the ground. The flyer with exophoria may level off too soon in landing, stall, and smash up. In the thin air of high altitudes, accommodation may be greatly diminished, and this—coupled with the tonic action of the muscle of accommodation induced by the effort to focus the light ray on the retina—will help to tire the eye with a latent hyperopia of more than one diopter, causing the pilot to fail to read precision maps and instruments correctly. Visual acuity of 20/20 is insisted upon, and no contact or other lenses are allowed. Ready dark adaptability is another necessary qualification. The night flyer must be able to change his vision quickly and efficiently from the bright instrument panel to the outside world and back. He must be unaffected by disturbing effects of glare—glare from searchlights, from a dazzling tropical sun or the burning reflection from fuselage can give rise to defective adaptation and night blindness, disturbances of visual acuity, accommodation and fields. Conjunctivitis, too, is sometimes produced by long or frequent exposure to the higher actinic effects of sunlight at high altitudes. However, in spite of the apparently numerous hazards to which the pilot's eyes may be subject, there is no evidence that military aviation is likely to cause permanent damage to vision.

Steel Gets in the Eye.—Daily inspection of all hammers and chisels by the shop foreman is recommended by Dr. Francis D. Gulliver in an article appearing in the November issue of the *Archives of Ophthalmology*. In his experience with 1,800 intra-ocular foreign bodies, Dr. Gulliver has encountered only 10 which were not steel. Eighty per cent of the foreign bodies originated in the mushroomed edges of a cold chisel, a steel drill or a steel hammer. Excluding cases of irreparable initial damage, Dr. Gulliver found that in 80 to 90 per cent of the cases in which the particle was successfully removed it was possible to retain normal or slightly less than normal vision after removal.

Asks Aid in Bringing New Eye Disease Under Control.—To assist in bringing under control the new eye disease, epidemic keratoconjunctivitis (inflammation of the cornea and of the membrane

lining the eyelids and covering the front of the eyeball), it is requested in a letter in *The Journal of the American Medical Association* that new outbreaks of the disease be reported to Murray Sanders, M.D., New York, who has been assigned by the army to study the disease. The letter by John R. Paul, M.D., Director, Commission on Neurotropic Virus Diseases, Board for the Investigation and Control of Influenza and Other Epidemic Diseases in the army, is as follows:

To the Editor: Among some of the growing problems which have confronted both health officers and industrial physicians in the country during the past year has been that of epidemic keratoconjunctivitis, called by some "shipyard conjunctivitis." The disease is apparently new to this country, but it has appeared in epidemic form both on the West Coast and in the East (and perhaps elsewhere) during the short space of a few months. During this period, however, much has been learned, to which recent articles testify. This information is not general as yet and apparently epidemic situations can develop insidiously in factories before the nature of the conjunctivitis in its potential seriousness is recognized.

To my knowledge the disease is not reportable in this country, and because of this and other obvious reasons it seems wise to bring it to the attention of *The Journal.* It is earnestly requested that if new outbreaks, or suspected outbreaks, of this disease (epidemic keratoconjunctivitis) should occur, notification of this fact be made to Dr. Murray Sanders (Department of Bacteriology, College of Physicians and Surgeons, 630 West 168th Street, New York City).

Dr. Sanders has been assigned by the Board for the Investigation of Epidemic Diseases in the U. S. Army to study this problem and to assist in the control of this disease.

Meeting of the International Council for Exceptional Children.—The twenty-first annual convention of the International Council for Exceptional Children will be held February 24, 25, and 26, 1943, at the Lincoln Hotel, Indianapolis, Indiana. Dr. John J. Lee of Wayne University has been elected Acting President of the International Council, in the absence of Dr. Samuel Kirk, President, who has entered the service of the U. S. Army Specialist Corps.

State Agencies in Prevention of Blindness.—Reporting on the distribution of health services in the structure of state government, in a recent issue of *Public Health Reports* Joseph W. Mountin and Evelyn Flook evaluate state medical care for special conditions. As state aid-to-the-blind programs developed and the large number

of blind persons in need of public assistance was disclosed, state attention began for the first time to be focused on the prevention of partial and total blindness. Until recently, prevention of blindness in infants was the only aspect of sight conservation or restoration for which the state had felt responsibility. State health departments, without exception, have promoted the use of the Credé method, and in the few remaining states in which there is no legislation directing that silver nitrate be instilled in the eyes of the newborn, the health department particularly urges its use.

In several states definite programs have been established for the control of trachoma. Two state health departments maintain hospitals exclusively for the treatment of trachoma cases; another state finances the hospitalization of trachoma patients on the basis of individual cases. Four health departments and three departments of welfare provide diagnosis and treatment of this disease through trachoma clinics.

For the purpose of discovering progressive remediable eye disorders and diseases, 15 states have established refraction clinics, in many cases operated by the state university hospital. Fourteen other states finance individual ophthalmological examinations, chiefly for applicants for aid-to-the-blind. Hospital care, inclusive of surgery, is provided certain groups of patients at state expense in approximately two thirds of the areas. The eligibility of the patient for this service is variously determined in each state, in some cases by the patient's income or by the judgment of the state ophthalmologist, or by a combination of the two conditions. In approximately 20 per cent of the states which provide hospital care for eye cases this service is one item of a general program of medical care.

Edward Jackson, M.D., Sc.D., 1856–1942.—The REVIEW has lost a guiding spirit in the death of Dr. Edward Jackson, a leader in ophthalmology and in prevention of blindness. We quote here the tribute paid to him by the Board of Directors of the Society.

"Death has taken away one of the outstanding pioneers in the movement for prevention of blindness, Dr. Edward Jackson. He reached the ripe age of eighty-six, and was active to the very end of a career that was of the greatest service to mankind.

"Dr. Jackson's efforts to conserve vision extended over a period of sixty years. In addition to being a distinguished ophthalmologist, he was also a trail blazer in the lay movement for protection of eyesight. In recognition of his outstanding achievements in this field, he received the first award of the Leslie Dana Gold Medal when it was established in 1925.

"His contributions to medicine—as teacher, writer and practitioner—were immense. He was surgeon to the Wills Eye Hospital in Philadelphia for several years, Professor Emeritus of Ophthalmology in the University of Colorado, Consulting Editor of the American Journal of Ophthalmology, and former president of all leading ophthalmological societies.

"A modest and wise man, Dr. Jackson was long known affectionately as 'the dean of American ophthalmologists,' and his name was respected in scientific circles throughout the world. Men of his stature and attainments are rare, and difficult to replace."

Luther Crouse Peter, M.D., 1869–1942.—Dr. Luther C. Peter, a former President of the American Board of Ophthalmology and of the American Academy of Ophthalmology and Otolaryngology, and since 1940 professor emeritus of ophthalmology in the Graduate School of Medicine of the University of Pennsylvania, died November 12, 1942, at the age of 73 years. We have had the privilege of publishing several of Dr. Peter's articles in the REVIEW, and the benefit of his generous counsel as a member of the Society's Advisory Committee. Dr. Peter will be deeply missed, not only for his professional advice, but for his warm support whenever we turned to him for assistance.

Current Articles of Interest

Miotics and Mydriatics in Relation to Ocular Hypertension, Carl Koller, M.D., *Diseases of the Eye, Ear, Nose and Throat,* October, 1942, published monthly by the Physicians Postgraduate Press, 500 North Dearborn Street, Chicago, Illinois. The effect of mydriatics in precipitating hypertension in predisposed eyes is generally ascribed to a blocking of the angle of the anterior chamber, brought about by the iris moving to the periphery. While this is a factor, states Dr. Koller, its importance is much overemphasized, for the absorbing power of the pectinate ligament and Schlemm's canal is certainly less than the absorbing power of the circulation (the capillaries and veins of the iris and the veins and lymph vessels of the posterior surface of the choroid). Mydriatics have a strong constricting action upon the arteries of the iris and the choroid, and there is a resultant slowing up of the blood flow. The arterial blood pressure, remaining unchanged, is not sufficient to drive the blood through the smaller arteries and veins; consequently the choroidal veins become engorged. Miotics, on the other hand, dilate the arteries, thus speeding up the circulation in the uvea and the iris and broadening the absorbing surface of the iris, and as a result increasing the drainage of intra-ocular fluid. The narrowing of the pupil is caused incidentally as the pressure of blood in radically arranged arteries broadens the iris. In the process, the iris angle is freed and a way of drainage through Schlemm's canal provided for the aqueous, but Dr. Koller believes it inaccurate to attribute the lowering of intra-ocular pressure solely to the freeing of the iris angle.

The wide pupil characteristic of hypertension is due to the emptying of the iridic arteries, which allows them to assume a tortuous course, whereupon they cease to counteract the action of the elastic fibers which dilate the iris. The other characteristics of hypertension—narrow, constricted arteries and engorged choroidal veins—provide the basis for an understanding of the aggravating action of mydriatics and the remedial action of miotics, hot applications and morphine, by way of the circulatory system. Dr. Koller sug-

gests that the existing confusion has been caused in part by the nomenclature, which refers to the size of the pupil in describing the action of miotics and mydriatics, rather than to their effect upon the circulation. He feels that it is more than an academic dispute, however, since it is responsible for the widespread belief that increase of tension is entirely due to "blocking of the angle of the anterior chamber."

Extração Capsulo-Lenticular da Catarata, Sem, Midriase, José de Almeida Rebouças, *Arquivos Brasileiros de Oftalmologia*, October, 1942, published bimonthly by Liga Nacional de Prevenção da Cegueira, São Paulo, Brasil. The author describes the following procedures and methods as developed by him in his clinic: (*a*) the akinesia; (*b*) the peripheral iridectomy, made with a toothless forceps; (*c*) the points of suture made after keratotomy; and (*d*) the operation without mydriasis. He describes a special lightweight dressing, and concludes with the presentation of thirteen cases of intracapsular extraction.

War Gas Injuries of the Eye, Edmund D. Godwin, M.D., *California and Western Medicine*, November, 1942, published monthly by the California Medical Association, 450 Sutter, San Francisco, California. Because mustard gas is the only vesicant which has had use in the thirty-eight years since poison gases were first employed as an agent of warfare, mustard is the only gas which up to the present has resulted in serious eye injuries. Being easily soluble in animal fat, it penetrates rapidly into skin and lid margin, acting upon cornea and conjunctiva as a protoplasmic poison and working deep into the tissue. Repeated minimal exposures are cumulative in effect.

A latent period of from 2 to 48 hours follows exposure to mustard vapor; droplets of the liquid, however, cause almost immediate discomfort. Victims experience a burning sensation, followed by pain in and around the eye, with a sandy feeling under the lids. Tearing is profuse, although the gas does not dissolve in lacrimal secretion, and blepharospasm is often intense enough to prevent voluntary opening of the eyes. The severity of the picture depends upon the degree of exposure, and cases can be divided into two

groups, according to the existence of visible corneal involvement. Seventy-five to 90 per cent of all cases are mild, showing conjunctival congestion, especially in the palpebral aperture, and edema of the margins of the lids where the fatty meibomian secretion makes them particularly vulnerable. In these instances, two weeks is the period usually required for complete recovery. However, 10 to 25 per cent of cases develop more serious reactions. The cornea may reveal an "orange-peel" texture, or it may be eroded. Surface conjunctiva is destroyed, and iris spasm produces miosis. Convalescence may require several months.

After exposure to mustard gas, treatment is useless to prevent a lesion, but the extent of the damage may be reduced by prompt lavage. The eyes should be opened to release dammed-up tears and to show the alarmed patient that he is not blind. Frequent irrigation with a bland solution, such as normal saline, guards against bacterial complications. Bandaging is contraindicated but dark glasses or an eye shade should be worn. Mineral oil may be instilled to prevent adhesion of the raw surfaces and atropine is used in eyes with corneal damage. The same treatment should be given in cases of lewisite eye injury. Lewisite is similar in action to mustard, but in addition contains arsenic. Ocular lesions are more marked. Prophylaxis in all cases of possible gas eye injury includes use of the gas mask and periodic eye irrigation. This holds true of the lacrimator gases, also, although their effect on the eye, while distressing, is relatively innocuous and symptoms cease soon after removal from the contaminated atmosphere.

The Therapy of External Diseases of the Eye, Major Edward P. Burch, First Lieutenant Herman G. Rubin, and First Lieutenant Welborn W. Sanger, M.C., U. S. Army, *The Military Surgeon*, November, 1942, published monthly by the Association of Military Surgeons of the United States, Washington, D. C.

The authors present an outline of procedures employed at the Eye, Ear, Nose and Throat Clinic of the Station Hospital at Fort Sill, Oklahoma.

Clinical records of the Fort Sill Station Hospital, which is considered to be a representative post, show the following to comprise the majority of external diseases of the eye:

1. Impacted foreign bodies of the cornea.
2. Conjunctivitis, especially the acute catarrhal type.
3. Corneal ulcers, frequently occurring in association with catarrhal conjunctivitis.
4. Acute dacryocystitis.
5. Blepharitis marginalis.
6. Hordeolum.
7. Pterygium.

Although most of these conditions, with the possible exception of ulcerative keratitis and foreign body complications, cause no serious impairment of vision, the acute infectious conditions can produce considerable disability and loss of time from duty.

In the therapy of external infectious conditions of the eye, the authors have routinely used a 5% sulfathiazole ointment in a petrolatum base, and results have indicated its use to be of definite value. Properly prepared, the ointment does not injure the mucous membranes, and considerably shortens the course of infection in comparison with other ophthalmic ointments. Infections of which staphylococcus is the causative organism are combatted successfully by means of the toxoid, and in severe or intractable cases the combined use of sulfathiazole and toxoid was found most effective.

Superficial Vascularization of the Cornea, Harold R. Sandstead, Passed Surgeon General, United States Public Health Service, *Public Health Reports*, November 27, 1942, published weekly by the United States Public Health Service, Washington, D. C. In 1931 and again in 1939 there were reports of a causal relationship between vitamin G deficiency and vascularizing keratitis in animals. In 1940 it was reported that a superficial vascularizing keratitis of the cornea in human patients known to be receiving insufficient riboflavin was cured when the vitamin was administered and recurred when the vitamin was withdrawn. The Conference on Methods and Procedures for Nutrition Survey stated in 1942, "Characteristic capillary invasion of the cornea is an index of riboflavin deficiency and it is recommended that this examination (slit-lamp and biomicroscopic examination) be used in group assessments of the nutritional status."

The present survey by Dr. Sandstead was undertaken to collect

data on the prevalence of superficial vascularization of the cornea in various population groups, and the effect of riboflavin on that condition. Study groups totaling 366 persons were examined and 52 of these were included in a riboflavin-feeding project. There was a group of 107 parochial school children, one of 190 National Youth Administration youths, and two groups of adults, totaling 69. Two examiners routinely made independent examinations of all who received therapy, as well as of the majority of the whole survey group. Superficial vascularization of the cornea was found to be extremely prevalent. Of the parochial children studied, only 18 per cent were without penetration of vessels beyond the limbus. Only 6.3 per cent of the National Youth Administration subjects (the group with lowest financial status) and 45.2 of the adults were without corneal vascularization.

Twenty-four youths who presented varying degrees of corneal vascularization were re-examined and divided equally into control and riboflavin-feeding groups. Five older subjects with corneal involvement were also placed in the riboflavin-feeding group. Therapy continued for 60 days, with re-examination every 10 days. A group of 22 school children were equally divided into therapy and control groups, and were re-examined after 49 days of therapy. Dr. Sandstead summarizes the results of therapy and the conclusions that might be drawn:

"In the two controlled feeding projects, one of which was by individual school feeding, no significant change in the degree of corneal vascularization occurred which could be ascribed to riboflavin effect. In no instance was there complete disappearance of the vessels and in several a progression was observed. At the present time, therefore, it seems doubtful that superficial vascularization of the cornea, as observed in this study and as found in the general population, should be considered a diagnostic sign of riboflavin deficiency; further controlled investigations along this line should be made."

The Removal of Metallic Foreign Bodies from the Eyeball and from the Orbit, Edmund B. Spaeth, M.D., *Journal of the American Medical Association*, October 31, 1942, published weekly by the

American Medical Association, 535 North Dearborn Street, Chicago, Illinois. The author presents the following summary:

"The extraction of magnetic and nonmagnetic foreign bodies from the globe and the orbit from personal experiences is considered to evaluate some of the rather significant and important procedures at one's command. They include the following:

"1. The great and important possibilities of roentgenograms, frequently not used adequately, both as to flat angled views and as to stereoscopic views.

"2. The use of air injections into Tenon's capsule for more accurate localization of extra-ocular particles.

"3. The use of radiopaque appliances for localization, but especially as an aid to the extraction of nonmagnetic foreign bodies, with a flap sclerotomy.

"4. The use of and the indications for the biplane fluoroscope.

"5. A consideration of certain important factors in the use of magnets, diagnostic and therapeutic.

"6. Indications for, and the use of, the endoscope."

Book Review

THE ART OF SEEING. Aldous Huxley. New York: Harper & Brothers, 1942. 273 p.

The crop of books on this particular fad is still abundant, and we must assume that the demand for such writings is adequate to compensate the publishers for the risk and expense of placing them on the market. Here we see one of the oldest publishing houses in the United States putting the stamp of its enthusiastic approval upon a volume which is based on prejudice, false hopes, and lack of scientific understanding of the organ of vision.

The general value of publishers' announcements is seriously discounted by such a statement as that of Harper & Brothers—"established 1817"—that this book is "a rediscovery of the basic rules of vision." Aldous Huxley has rediscovered no basic rules of vision. He has not rediscovered anything at all. Such parts of his volume as have any value at all have been lifted from the works of writers on psychology. Of the physical facts of vision he knows very little.

Huxley's teacher, so far as the "art of seeing" is concerned, is the late William H. Bates, whose German followers have not hesitated to compare him with Christ, and who claimed to cure glaucoma, myopia, hyperopia, astigmatism, presbyopia, cough, hay fever, rheumatism, trigeminal neuralgia, incipient cataract, syphilitic iritis, retinitis, and keratitis, and to relieve the toxic effects of typhoid, influenza, and gonorrhea.

Bates presented to the public a supposed group of animal experiments by which he claimed to have proved that accommodation in animals, and also in man, was due to the action of the superior and inferior oblique muscles. These experiments, largely on fishes, were performed in obvious ignorance of laboratory technique and of the facts of human anatomy and comparative ophthalmology. Bates's contention that the crystalline lens has nothing to do with accommodation ignores completely the clear demonstrations of accommodative action which have been obtained with the slit-lamp and in other ways. He was also quite ignorant of, or preferred to ignore, the indisputable evidence of astigmatic corneal curvature

as presented by the ophthalmometer, although such evidence can be obtained repeatedly on the same patient at intervals of time and under varying conditions of rest and exercise, ocular use and disuse.

Huxley accepts as gospel everything that Bates taught, and wraps around these teachings a fine frenzy of psychological discourse. Any elements of truth and interest contained in his psychological dissertations do not offer the least support for his contention that "orthodox ophthalmologists are content to palliate the symptoms of poor sight by means of 'those valuable crutches,' artificial lenses"; or that ophthalmologists "work only on the sensing eye and ignore completely the selecting, perceiving, and seeing mind."

Aldous Huxley, as the publishers tell us, had the misfortune to suffer in his youth from a serious eye affliction which forced him to leave Eton College, and from which he was almost completely blind for three or four years. He succeeded in going through Balliol College, Oxford, by reading with a magnifying glass. Huxley's own preface speaks of a violent attack of *keratitis punctata* which left one eye just capable of light perception and the other with enough vision to permit of his detecting the two-hundred foot letter on the Snellen chart at ten feet (that is, five per cent of normal vision).

Whatever we may think of some of his literary productions, it is, of course, remarkable that a man so afflicted should have achieved such success in the world of letters. A man whose corneas were so clouded and distorted must have experienced great distress and repeated fatigue in the use of his eyes; and his many vain efforts to obtain substantial benefit from the wearing of spectacle lenses have no doubt had much to do with his belief in the Bates method.

What are the various therapeutic measures recommended by Bates, and repeated, with much amplification, by his disciple, Huxley? Essentially they resolve themselves into a variety of maneuvers, some ludicrous but many obvious and quite lacking in mystery, to produce relaxation of the eyes and of the general nervous system. Never is substantial evidence presented to the effect that any person's vision was measurably improved by the exercises, or that the underlying refractive condition of the eyes was changed.

If, when tired of reading, you have covered your eyes with your hands, you have performed one of the classical "exercises" for the

"improvement of sight by natural methods," to quote the title of a book by another of Bates's ilk. This is practically what Bates would call by the fancy title of "palming." "Blinking," "flashing," "winking," and "shifting" (moving the focus from one thing to another) prove upon examination to be merely further methods of mental, ocular, and bodily relaxation.

Huxley touches but little upon Bates's extravagant claims for the cure of serious eye diseases by means of so-called exercises. "The art of seeing," he says, "is not primarily a therapy; but, at one remove and indirectly, it results in the relief or cure of many serious diseases of the eyes."

Naïvely, Huxley remarks that some of the procedures described may seem rather silly, childish, and undignified. Particularly recommended by Huxley, and perhaps original with him, is "nose-writing." "Sitting down comfortably in an easy chair, close your eyes and imagine that you have a good long pencil attached to the end of your nose. . . . Equipped with this instrument, move your head and neck so as to write with your protracted nose upon an imaginary sheet of paper . . . eight or nine inches in front of your face. Begin by drawing a good-sized circle. . . . Go over it half a dozen times, round and round, until the thickened circumference comes to look presentable." And so on, for two pages.

We are assured that "A little nose-writing, followed by a few minutes of palming, will do wonders in relieving the fatigue of a strained mind and staring eyes, and will result in a perceptible temporary improvement of defective vision. This temporary improvement will become permanent, as the normal and natural functioning fostered by nose-writing and the other procedures described in this book becomes habitual and automatic."

It must be remembered that, in addition to those unfortunate subjects who, like Huxley, can never hope to have perfect vision either with or without glasses, there are always a great many people in whom the influence of vanity is so strong that they will do almost anything to avoid the wearing of spectacle lenses. We recall that the German genius, Johann Wolfgang Goethe, although highly myopic, was so vain as to his personal appearance that he tried to avoid the wearing of glasses in the presence of others.

In his *Wilhelm Meister's Wanderjahre*, Goethe speaks of glasses

as favoring darkness and inward falsity. "He who wears glasses regards himself as wiser than he is." "Whenever I look through glasses, I am another person and am displeasing to myself; I see more than I ought to see, the world which I thus see more sharply defined does not harmonize with my inward self, and I quickly lay the glasses aside as soon as my curiosity as to the nature of this or that distant object is satisfied."

Many people of this type will probably continue to frequent the dishonest practitioner who pretends to cure refractive errors by eye exercises, or the Bates disciple who claims similar benefits from the sort of exercises described in the present volume. But it is hardly likely that the vast majority of intelligent persons who have access to a good ophthalmologist will permit themselves to be fooled in either of these ways.

—WILLIAM H. CRISP, M.D.

Briefer Comment

OUTWITTING THE HAZARDS: Youth Attacks the Accident Problem. Francis L. Bacon. New York: Silver Burdett Company, 1941. 446 p.

Copiously illustrated with clear, humorous drawings and excellent photographs, *Outwitting the Hazards* is a manual for a high school or even an adult class in safety. The hazards of modern living are analyzed and suggestions and factual information given on how to outwit them. Not only the hazards in and about school and home but others are discussed. Airplane accidents are analyzed; up-to-the-minute details are described of the latest safety devices for parachutes and lifeboats. The automobile receives deserved attention as a consumer problem, with diagrams of the clutch and the brake drum to catch the eye of the high-school mechanic. The writer does not make the mistake of assuming that the modern young reader comes to this book interested in safety, as such; rather, he seeks to stimulate attention to important hazards through an appeal to youthful interest in camping, science, sports, mechanics, and modern industry. The book is well adapted to integration in any class on community affairs, civics, or even general science.

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Index—Sight-Saving Review

Volume XII: 1942

Administration and Program Planning:

Administrative Problems of Eye Clinics in Caring for Glaucoma Patients. VIRGINIA SMITH. 3:182

Administrative Problems of Eye Clinics in Caring for Glaucoma Patients. VIRGINIA SMITH. 3:182

ALVARO, MOACYR E., M.D. Latin American Developments in the Prevention of Blindness. 4:235

Aniseikonia. HOMER B. FIELD, M.D. 2:98

Apropos of Glaucoma. MARK J. SCHOENBERG, M.D. 4:252

Book Reviews:

Art of Seeing. Aldous Huxley. Reviewed by WILLIAM H. CRISP, M.D. 4:303

Contact Lenses. Theo. S. Obrig. Reviewed by OLGA SITCHEVSKA, M.D. 3:226

Handbook of Ocular Therapeutics. Sanford R. Gifford. Reviewed by ADOLPH POSNER, M.D. 3:222

Modern Factory Lighting. British Electrical Development Association and ELMA Lighting Service Bureau. Reviewed by CHARLES P. TOLMAN. 2:155

Motivation and Visual Factors. Irving Bender, Henry A. Imus, John W. M. Rothney, Camilla Kemple, Mary R. England. Reviewed by ARNO E. TOWN, M.D. 3:227

Nursing in Diseases of the Eye, Ear, Nose and Throat. Manhattan Eye, Ear and Throat Hospital. Reviewed by ANNE M. HAHN, R.N. 3:223

Play for Convalescent Children. Anne Marie Smith. Reviewed by ELIZABETH G. GARDINER. 2:156

Role of the Teacher in Health Education. Ruth M. Strang, Ph.D, and Dean F. Smiley, M.D. Reviewed by PAULINE BROOKS WILLIAMSON. 3:224

Briefer Comment:

Account of Twelve Months of Health Defense. FIORELLO H. LAGUARDIA, Mayor; JOHN L. RICE, M.D., Commissioner of Health. 2:158

Fundamentals of Physical Examination. GEORGE G. DEAVER, M.D. 2:158

Outwitting the Hazards. FRANCIS L. BACON. 4:306

Public Health Nurse in Action. MARGUERITE WALES. 2:159

Study of Railway Transportation, Vols. I and II. Association of American Railroads. 3:228

Care of the Eyes in Middle Age. WILLIS S. KNIGHTON, M.D. 3:190

CARRIS, LEWIS H. Twenty Years in Saving Sight. 3:168

Children:
Children's Services in Sight Conservation. LAURA E. DESTER. 2:110
Legibility in Comic Books. MATTHEW LUCKIESH and FRANK K. MOSS. 1:19
Ophthalmologist and the Partially Seeing Child. WINIFRED HATHAWAY. 3:196
Parent's Responsibility in the Detection and Treatment of Crossed Eyes. ISADORE GIVNER, M.D. 4:266

Children's Services in Sight Conservation. LAURA E. DESTER. 2:110

Conservation of Vision:
Care of the Eyes in Middle Age. WILLIS S. KNIGHTON, M.D. 3:190
Children's Services in Sight Conservation. LAURA E. DESTER. 2:110
Eye Protection in the Defense Industries. JOSEPH A. HALLER. 1:11
Latin American Developments in the Prevention of Blindness. MOACYR E. ALVARO, M.D. 4:235
Legibility in Comic Books. MATTHEW LUCKIESH and FRANK K. MOSS. 1:19
Ophthalmologist and the Partially Seeing Child. WINIFRED HATHAWAY. 3:196
Sight Restoration in Indiana as Conducted by the State Department of Public Welfare. C. W. RUTHERFORD, M.D. 2:103
Specialization of Conservation of Vision in Institutional Nursing. CORA L. SHAW, R.N. 1:25
Twenty Years in Saving Sight. LEWIS H. CARRIS. 3:168
View of Prevention of Blindness in Relation to Public Health. ELEANOR BROWN MERRILL. 2:90
Year of Sight Conservation Work in Wartime. ELEANOR BROWN MERRILL. 4:259

Contributors: 1:80; 2:160; 3:232; 4:307

Current Articles of Interest: 2:153; 3:214; 4:297

Current Publications on Sight Conservation: 3:229

Demonstrations of Medical Social Work in Eye Clinics. ELIZABETH G. GARDINER. 2:125

DESTER, LAURA, E. Children's Services in Sight Conservation. 2:110

EBELING, ALMA. Industrial Worker—His Eyes. **(Forum)** 3:201

Eye Diseases and Defects:
Administrative Problems of Eye Clinics in Caring for Glaucoma Patients. VIRGINIA SMITH. 3:182
Aniseikonia. HOMER B. FIELD, M.D. 2:98
Apropos of Glaucoma. MARK J. SCHOENBERG, M.D. 4:252
Eye Problem in the National Defense Situation. HARRY S. GRADLE, M.D. 1:3
Glaucoma. HARRY S. GRADLE, M.D. **(Forum)** 4:270
Ophthalmia Neonatorum. J. VINCENT FLACK, M.D. 2:120
Parent's Responsibility in the Detection and Treatment of Crossed Eyes. ISADORE GIVNER, M.D. 4:266

Eye Injuries:
First Aid for Eye Injuries. ARNO E. TOWN, M.D. 3:163
War and Eye Injuries. OLGA SITCHEVSKA, M.D. 2:83

Eye Problem in the National Defense Situation. HARRY S. GRADLE, M.D. 1:3

Eye Protection in the Defense Industries. JOSEPH A. HALLER. 1:11

FIELD, HOMER B., M.D. Aniseikonia. 2:98

First Aid for Eye Injuries. ARNO E. TOWN, M.D. 3:163

First Inter-American Congress on the Prevention of Blindness. MATTHEW LUCKIESH. **(Forum)** 3:205

FLACK, J. VINCENT, M.D. Ophthalmia Neonatorum. 2:120

Forum:
First Inter-American Congress on the Prevention of Blindness. MATTHEW LUCKIESH. 3:205
Glaucoma. HARRY S. GRADLE. 4:270
Industrial Worker—His Eyes. ALMA EBELING. 3:201

GARDINER, ELIZABETH G. Demonstrations of Medical Social Work in Eye Clinics. 2:125

GIVNER, ISADORE, M.D. Parent's Responsibility in the Detection and Treatment of Crossed Eyes. 4:266

Glaucoma. HARRY S. GRADLE, M.D. **(Forum)** 4:270

GRADLE, HARRY S., M.D. Eye Problem in the National Defense Situation. 1:3; Glaucoma. **(Forum)** 4:270

HALLER, JOSEPH A. Eye Protection in the Defense Industries. 1:11

HATHAWAY, WINIFRED. Ophthalmologist and the Partially Seeing Child. 3:196

Industrial Eye Efficiency in the War Program. CHARLES P. TOLMAN. 4:244

Industrial Eye Protection:
Eye Protection in the Defense Industries. JOSEPH A. HALLER. 1:11
Industrial Eye Efficiency in the War Program. CHARLES P. TOLMAN. 4:244
Industrial Worker—His Eyes. ALMA EBELING. **(Forum)** 3:201

Industrial Worker — His Eyes. ALMA EBELING. **(Forum)** 3:201

KNIGHTON, WILLIS S. Care of the Eyes in Middle Age. 3:190

Latin American Developments in the Prevention of Blindness. MOACYR E. ALVARO, M.D. 4:235

Latin American Prevention of Blindness:
First Inter-American Congress on the Prevention of Blindness. MATTHEW LUCKIESH. **(Forum)** 3:205
Latin American Developments in the Prevention of Blindness. MOACYR E. ALVARO, M.D. 4:235

Legibility in Comic Books. MATTHEW LUCKIESH and FRANK K. MOSS. 1:19

LUCKIESH, MATTHEW. First Inter-American Congress on the Prevention of Blindness. **(Forum)** 3:205

LUCKIESH, MATTHEW, and MOSS, FRANK K. Legibility in Comic Books. 1:19

Medical Social Work:
Demonstrations of Medical Social Work in Eye Clinics. ELIZABETH G. GARDINER. 2:125

MERRILL, ELEANOR BROWN. View of Prevention of Blindness in Relation to Public Health. 2:90; Year of Sight Conservation Work in Wartime. 4:259

MOSS, FRANK K., and LUCKIESH, MATTHEW. Legibility in Comic Books. 1:19

News of State Activities: 2:136; 4:275

Note and Comment: 2:148; 3:208; 4:286

Nursing:
Specialization of Conservation of Vision in Institutional Nursing. CORA L. SHAW, R.N. 1:25

Nutrition:
Nutritional Defects and the Eyes. BENJAMIN RONES, M.D. 3:178

Nutritional Defects and the Eyes. BENJAMIN RONES, M.D. 3:178

Obituaries: 4:295

Ophthalmia Neonatorum. J. VINCENT FLACK, M.D. 2:120

Ophthalmologist and the Partially Seeing Child. WINIFRED HATHAWAY. 3:196

Parent's Responsibility in the Detection and Treatment of Crossed Eyes. ISADORE GIVNER, M.D. 4:266

RONES, BENJAMIN, M.D. Nutritional Defects and the Eyes. 3:178

RUTHERFORD, C. W., M.D. Sight Restoration in Indiana as Conducted by the State Department of Public Welfare. 2:103

SCHOENBERG, MARK J., M.D. Apropos of Glaucoma. 4:252

SHAW, CORA L., R.N. Specialization of Conservation of Vision in Institutional Nursing. 1:25

Sight Restoration in Indiana as Conducted by the State Department of Public Welfare. C. W. RUTHERFORD, M.D. 2:103

Sight-Saving Classes:
Ophthalmologist and the Partially Seeing Child. WINIFRED HATHAWAY. 3:196

SITCHEVSKA, OLGA, M.D. War and Eye Injuries. 2:83

SMITH, VIRGINIA. Administrative Problems of Eye Clinics in Caring for Glaucoma Patients. 3:182

Social Service:
Children's Services in Sight Conservation. LAURA E. DESTER. 2:110

Sight Restoration in Indiana as Conducted by the State Department of Public Welfare. C. W. RUTHERFORD, M.D. 2:103

View of Prevention of Blindness in Relation to Public Health. ELEANOR BROWN MERRILL. 2:90

Specialization of Conservation of Vision in Institutional Nursing. CORA L. SHAW, R.N. 1:25

State Activities, News of: 2:136; 4:275

TOLMAN, CHARLES P. Industrial Eye Efficiency in the War Program. 4:244

TOWN, ARNO E., M.D. First Aid for Eye Injuries. 3:163

Twenty Years in Saving Sight. LEWIS H. CARRIS. 3:168

View of Prevention of Blindness in Relation to Public Health. ELEANOR BROWN MERRILL. 2:90

War and Eye Injuries. OLGA SITCHEVSKA, M.D. 2:83

Wartime Eye Problems:

Eye Problem in the National Defense Situation. HARRY S. GRADLE, M.D. 1:3

First Aid for Eye Injuries. ARNO E. TOWN, M.D. 3:163

Industrial Eye Efficiency in the War Program. CHARLES P. TOLMAN. 4:244

War and Eye Injuries. OLGA SITCHEVSKA, M.D. 2:83

Year of Sight Conservation Work in Wartime. ELEANOR BROWN MERRILL. 4:259

Year of Sight Conservation Work in Wartime. ELEANOR BROWN MERRILL. 4:259